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TRANSACTIONS & STUDIES

of

THE COLLEGE OF PHYSICIANS
OF PHILADELPHIA

MEDICINE & HISTORY

Series V Volume VIII N^O 1 March 1986

TRANSACTIONS & STUDIES

of

THE COLLEGE OF PHYSICIANS
OF PHILADELPHIA

MEDICINE & HISTORY

Series V Volume VIII N° 1 March 1986

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ISSN 0010–1087

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Transactions & Studies of the College of Physicians of Philadelphia (ISSN 0010 – 1087) is published four times a year (March, June, September, December) by the College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, PA 19103. Second-class postage paid at Philadelphia, PA 19104. POSTMASTER: Send address changes to *Transactions & Studies of the College of Physicians of Philadelphia,* 19 South 22nd Street, Philadelphia, PA 19103.

Subscription correspondence should be sent to Publications Manager, *Transactions & Studies,* The College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, PA 19103. Subscriptions, U.S.A. and Canada $30.00, foreign $34.00. Single copies, $9.00.

Transactions & Studies of the College of Physicians of Philadelphia is indexed in *Biological Abstracts, Chemical Abstracts,* and *Index Medicus.*

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COLLEGE OF PHYSICIANS OF PHILADELPHIA

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Report of the Bicentennial Program
Planning Committee and New Century Fund
LEWIS L. CORIELL 1

MEDICINE AND HISTORY

Choosing Students — Making Doctors
JAMES E. ECKENHOFF 7

Cataracts 1986: Facts Versus Myth
STEPHEN B. LICHTENSTEIN 19

Rationing Health Care: Tragic Choices
BERNARD S. BLOOM 27

George E. de Schweinitz, M.D., and the
de Schweinitz Lecture in Ophthalmology
HAROLD D. BARNSHAW 37

REVIEW

GREENFIELD, LAZAR J., *Complications in Surgery and Trauma*
Reviewed by Alexander C. Hering 47

MEMOIRS

P. Robb McDonald
(1909–1985)
WILLIAM TASMAN 49

Robert E. Jones
(1930–1985)
FRANK A. ELLIOTT 51

COLLEGE ARCHIVES

Officers. Council. Committees.
Reports and Programs 53

Sections of the College
Officers. Reports. Programs 67

Fellows Elected in 1985 71

Fellows Deceased in 1985 71

Academia 73

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Acknowledgments

The publication of *Transactions & Studies of the College of Physicians of Philadelphia* is made possible through the generosity of:

The M. Louise Carpenter Gloeckner Memorial Fund
The Morris Feld Memorial Fund
The Benjamin and Mary Siddons Measey Foundation

Report of the Bicentennial Program Planning Committee and New Century Fund

LEWIS L. CORIELL

In anticipation of the two hundredth anniversary of its founding in 1787, the College of Physicians of Philadelphia completed a long-range planning process in 1984, including an internal analysis of programs and activities by the Kepner Tregoe Strategy Group in Princeton, New Jersey. In 1985 a fund-raising feasibility and planning study was conducted by the management consultant firm of Funderburke & Associates of Washington, D.C. Based on these objective professional studies and careful evaluation of the College's long-range financial needs by the Planning and Development Committee, in September 1985 Council approved a major fund-raising and promotional effort entitled The New Century Fund.

The New Century Fund represents one of three major activities prospectively coming to culmination. The other two are the Bicentennial Program Planning Committee, chaired by Jonathan Rhoads, Brooke Roberts and Lewis Bluemle, and the Health Policy Center Planning Committee, chaired by Paul Stolley and George Fisher. Both of these committees will report their recommendations to Council this spring. The New Century Fund campaign, chaired by William L. Grala, Vice President for Public Affairs at SmithKline Beckman Corporation, has already begun its work with the launching of the Fellowship phase of the campaign this year. The public campaign is scheduled to begin in the fall.

Assisting Mr. Grala in coordinating the New Century Fund campaign is a Campaign Steering Committee consisting of Robert Pressman as chair of the Fellowship Committee, Robert Bradley as chair of the Major Individual Gifts Committee, Daniel Shaw as chair of the Corporate Gifts Committee, Mark Allam as chair of the Foundation Gifts Committee, Lewis Coriell as President-Elect of the College, and Jonathan Rhoads as liaison to the Bicentennial Planning Committee.

The goal of the New Century Fund is to raise $8 million for support of priority needs in the Library, the Mütter Museum, the Wood Institute and the College, as well as to strengthen support of *Transactions & Studies* and to provide seed funds to establish a new Health Policy

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 1 (1986); 1-6.
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Center at the College. The Center will address, in a neutral forum, critical issues facing the practicing physician and his patient with regard to the quality of health care and cost-containing issues as part of a larger consideration of economic and social concerns of the medical profession.

Proud of its contributions to the advances of American medicine over two centuries, the College will use the occasion of its Bicentennial celebration, beginning this year and culminating with a two-day International Symposium on November 20 and 21, 1987, to move forward to a new century of service to the physician community and the larger society. The following report summarizes the preliminary plan, which will be further developed this spring.

Background

At a time of unprecedented proliferation of medical knowledge and the new demands on the practicing physician, the College has been reassessing its role. Established programs have been redesigned, and new ones are being developed. In a region rich in its universities, medical schools, hospitals and related agencies, the College recognizes its peculiar opportunity to bring together the resources of the medical community. Toward this goal, the College has adopted a progressive program to carry on the aim of the dream of its founding fathers: "Not for oneself, but for all."

From the start the College has undertaken to serve both physicians and the public. As a professional forum, it began to assemble an impressive library of medical information in 1787, building on the working library given by John Morgan, a Fellow of the College and founder of the first medical school in North America. Alert to community needs, the College organized the resources of the City of Philadelphia in contending with the epidemics of yellow fever that recurred for ten years, beginning in 1793.

Later, the College sponsored smallpox vaccination of children, established the city Health Department, promoted supplies of clean water and sewer systems and taught sanitation to the ignorant. Fellows of the College were active in establishing some of the leading hospitals of our city — the University of Pennsylvania, Jefferson, Episcopal, Presbyterian, Methodist, Philadelphia General and Pennsylvania hospitals — along with learned societies such as the American Philosophical Society, the Academy of Natural Sciences, the Franklin Institute

and the Philadelphia Free Library.

The accomplishments of the College in the past include participation in the first compilation of worthwhile therapeutic medicines, which in 1820 became the U.S. Pharmacopoeia, and a petition to Congress in 1878 urging publication of a subject catalogue for the growing body of medical literature. It has continued its special programs of information to the medical community with its quarterly, *Transactions & Studies*, first published in 1793; its superb library; and its pathological museum, begun in 1863. It takes pride in its membership over the decades—at the celebration of the College's centennial in 1887 Dr. D. Hayes Agnew enjoined his colleagues to study the roll of membership, for "you will find there the names of a galaxy of men who have left the deepest impress on the republic of medicine."

"Since 1909, our dutiful labors have conquered most of the contagious diseases, developed miraculous surgical intervention for every organ, striking advances in therapy, and the proliferation of precision instruments for diagnosis." Those were the words of the College's President-elect, Lewis Coriell, in addressing the Fellows in 1985 concerning Bicentennial plans. "Still," he went on, "a third century is beckoning, and we must continue our dutiful and innovative ministrations to the sick as we seek to conquer the diseases for which we now have only halfway or lesser measures, such as cancer, genetic defects, autoimmune, cardiovascular, degenerative and mental diseases."

Toward a New Century

To pursue its mission into the third century, the College will continue to provide a neutral meeting ground for physicians in private practice, various subspecialties, research, training, teaching, public health, industry and government. In this forum recurring new challenges can be aired for the benefit of the profession and the public. The challenges facing the nation in the development of a new health care system concern the College in its pursuit of the most effective use of all its resources.

The College's library, perhaps its greatest resource, is an example of the challenges facing the College and the medical profession for the future. The world's medical literature grows at a stunning rate. Modern methods of retrieving data selectively and with greater speed have exaggerated the speed. Twenty years ago the biomedical information dilemma came to a head. Medical libraries across the country,

in hospitals, medical schools and elsewhere, could not carry the innumerable specialized journal runs—nor could they respond to every reference request. In response, Congress authorized the National Library of Medicine to organize a nationwide network of libraries to share their valuable possessions and to work together to develop information retrieval systems. The College not only participated as a leadership institution in this national program but also anticipated the need more than twelve years earlier by establishing in 1953 its Medical Documentation Service to benefit professionals, the pharmaceutical industry and the law.

In exploring further expansion and cost-effective methods, the College has fostered a series of measures, including establishment of a regional plan for archival materials, an audiovisual network and greater decentralization of services. It has created within the library a health communications center to strengthen shared discourse and written materials by the use of electronic aids. Multimedia learning materials now transmit information in both sight and sound. Audiocassettes, slides coordinated with audiotapes and other materials, computer technology and extensive translation and extract services benefit a broad constituency of users in communicating health information.

In 1976 the College established the Francis C. Wood Institute for the History of Medicine, honoring a former President of the College and drawing on the College's remarkable library resources. In planning the Institute, a distinguished body of physicians, medical historians, educators and librarians concluded that "the weakness of much modern social thinking and legislation is that the architects of many social plans and laws know little about what happened more than 20 years ago. The aim of the Institute is information, not advocacy; that is its opportunity and its most valuable product."

A special resource the College makes available to the public is its Mütter Museum, one of the very few such remaining repositories in America. Replete with rich historical content, including anatomical and pathological collections as well as early biomedical instrumentation, the museum is visited by individuals and student groups in medicine, nursing and science classes, and physicians and scholars in disciplines in pursuit of special research interests. New acquisitions in historical materials and new museum techniques in display are part of the broadened program planned to sustain the museum as a national asset among modern health sciences museums. In 1985 a complete

renovation and modernization of the museum's facilities was begun.

The College has been a forum of intellectual exchange since its founding. Particular emphasis is planned during the period leading to the formal celebration of the College's bicentennial in November 1987 on explaining the ethical and practical concerns of today's physicians, on monitoring the development of a new national system of health care, and on shaping policy for the future, particularly in the Delaware Valley region.

The challenge of the next century may rest in the delicate balance between progress and the costs of achieving it. In the past, saving lives was the most crucial concern; today there are problems in life and death as natural or imposed phenomena. In the past, a comfortable life achieved through technology was sought; today the human experience is complicated by environmental pollution. In the past, medical care was dispensed with paternalism; today sociologists suggest that an individual may be motivated to change his own behavior. The College's library and museum, and especially the Francis C. Wood Institute, serve as bridges between the past and the present as communicators of important historical perspectives. The College's resources serve to complement those available in local colleges, universities, hospitals and societies.

When the Fellows of the College of Physicians of Philadelphia two centuries ago chose as their motto "Not for oneself, but for all," they sought to proclaim their professional dedication. The College has always reached beyond its own Fellowship of physicians to larger social issues and concerns. At no time in its history has this social vision been more important than now. Today it is moving forward aggressively to maintain its base for future service. Its Fellows are committed to expand the program of the College, not only because the College should be preserved as an important historical institution with exemplary resources but also because of the obligations of leadership.

Based on the careful assessment of its resources, programs and financial needs with regard to future directions for the College, the Fellows have identified priority objectives requiring a major infusion of new funds for program and for capital objectives. These needs are projected to require $8 million over and above current revenues from dues and services. The Fellowship intends to raise half of this amount from its own personal resources in advance of the two hundredth

anniversary celebration in November 1987. The balance will be sought from other sources that share the College's interests and concerns.

Health Policy Center

The College will announce at the formal Bicentennial celebration the establishment of the new Health Policy Center in which its traditional role as a neutral forum will be expanded to allow for the informed examination of issues, problems, controversy, financial concerns and potential solutions of matters relating to developing health policy, social implications, professional relationships, community needs and funding considerations.

The Center will draw on the resources of the library and the Wood Institute, medical schools in the area, the community of physicians and the College as a meeting place. It will reach out to involve the broader community of health-related foundations. To get the program under way, the College will sponsor an active Bicentennial program beginning in the fall of 1986 and culminating in the International Symposium in November 1987. Its meetings, featuring internationally renowned experts in health policy, will be open to the public. Its programs will be designed to appeal to the public and all members of the health services.

In stimulating dialogues and cooperation among area institutions, the Center will encourage shared technological developments in information science. Special attention will be given to moving Philadelphia into the forefront of solving the problem of storage and retrieval of scientific information in a rapidly changing field. While the College will serve as the actual focus and point of contact in these developments, it will draw on the important resources of neighboring institutions.

The Fellowship will be kept informed of all these efforts during the coming year as planning for the Bicentennial program and the new Health Policy Center progresses. The new monthly supplement to *Fellows' Forum* will report on these activities as well as on the progress of the New Century Fund.

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Choosing Students — Making Doctors

JAMES E. ECKENHOFF

The observations about to be presented are drawn from 40 years in academia—20 years each at the University of Pennsylvania and Northwestern, 5 years as chairman of a department in a medical school and 13 years as a dean. Medical schools vary in their governance procedures. In some, the dean acts as the chairman of the faculty and abides by its majority opinion in a democratic fashion. In others, the dean is the responsible academic officer and all faculty committees are advisory to him. Deans at Northwestern fall into the second category — hence they have considerable authority in setting policies, procedures, student, faculty and administrator selection and the like. The system works well as long as the dean keeps in mind that student or faculty unrest can lead to his dismissal because, after all, he serves at the pleasure of the university and can be relieved of his position at any time without reasons stated.

Choosing Students

The characteristics of a medical student body, which vary from one school to another, are determined by outside influences on the selection process on the one hand and by the selection process on the other. Most of the outside influence is brought to bear on state medical schools, where the pool from which students are drawn is legislated, and is primarily confined by state boundaries. In one state, not only is admission so confined but the legislature has ruled that its schools cannot refuse to admit a resident who meets certain minimal requirements, including stated minimal grades in college. The *manner* of selecting students is an important factor in private medical schools, where there is minimal outside influence. Under these circumstances, the selection procedure itself will determine the characteristics of the student body. A few private schools still place the responsibility in the hands of several individuals; most others are more democratic and use admission committees made up of basic science and clinical faculty and medical students. Under this system it is fairly obvious that over

The James M. Anders Lecture given at the College of Physicians on College Night, October 2, 1985.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 1 (1986); 7-17.
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a period of 5 to 7 years the character of a class may change, depending on the makeup and thoughts of the committee. For instance, in the late 60s and 70s there was a great push to accept more minority students and the characteristics sought in an applicant were changed. Motivation, desire to be a physician and stated intent to practice in underdeveloped areas became paramount while past performance, ability to handle a medical school curriculum and understanding the need to accept responsibility for the care of patients were ignored. As a result, many schools went through a period that was unhappy for all — students, faculty and school alike. Medical schools are not places for college graduates to receive remedial training. We learned that the hard way. Nonetheless, it is apparent that, while a few faculty and students may be socially conscious, in another group basic scientists look primarily at science performance and the clinical faculty seeks characteristics desirable in a practicing physician. This can have a distinct effect on the selection process if any one of the three groups becomes dominant. I refused to lobby for admission of any applicant but retained the privilege of veto and did exercise that power after my first year in office.

In the last 15 years, the sheer number of applicants has complicated the process of selecting students. If a school admits 110 students and has 6,000 applicants, the simple logistics of selection are formidable. Most private schools have arbitrary cutoff points to reduce the number to a more manageable level. These consist of a predetermined minimal set of college grades and MCAT scores together with acceptable essays on why an applicant wants to be a physician. Once the applicant has passed through this filter, recommendations are sought and an attempt is made to determine how seriously the applicant wants to matriculate. Those who survive this test are then invited for an interview by faculty and students. At our institution the interview is the make or break test. This is where a great deal of information is gained that is not contained in any material previously received: motivation; what has the applicant done with his summers and spare time; is there parental pressure; how well organized is the applicant?

Alumni doctors are notorious for applying pressure either directly on the sibling or on the school from which they graduated. With the economic future of the practice of medicine and the changes facing us, it will be interesting to see if the pressure diminishes. Some parental pressure takes interesting routes. One physician offered me $50,000

to admit his son; a devoted parent of an alumnus physician offered us an $85,000 insurance policy to accept the physician's son; a wealthy industrialist asked me my price to accept his daughter; and an alumnus offered to endow a chair if we would accept his son. Others use different pressures by way of politicians, attorneys, the university president or the development officer.

Accelerated medical educational programs. There are 15 or 20 accelerated programs in the country today, the number depending on the definition of *accelerated.* Students are selected for admission directly out of high school, spend 2 or 3 years in an accelerated college course and are guaranteed admission to medical school on completion of their college courses. We have had 25 years of experience with our accelerated program, and by any yardstick most of these students do well. Half of them are elected to AOA on graduation and achieve their residency of choice. There are some problems, however. It is very difficult during an interview with a 17- or 19-year-old to determine if that person will make a good physician. For this reason these programs must be flexible. Students need to be carefully scrutinized and counseled while in college; a desire for an extra college year or even two should be honored (15 to 25 percent of our students take this option), and there should be no surprise if some drop out of the program and head for a different career, as do 5 to 10 percent in our experience.

On matriculation into medical school, by reason of some immaturity our 60 ± accelerated students are easily identifiable from the 110 college graduates who make up the rest of the class. Again, counseling is important and some comes from an unexpected source—from older classmates who arrive from a variety of backgrounds and experiences. Usually, the immaturity begins to disappear after patient contact, and by graduation it is gone.

One trend I find interesting, although irrelevant to our subject, is that over the past 10 years we have seen a gradual shift in the ethnic background of students admitted to our accelerated programs. Slightly more than 50 percent of those admitted are now from Oriental or Asian families, most of whom immigrated to this country within the past 25 years. Nearly all the students are American born, are exceedingly bright, stand at the head of their high school class and have been highly motivated by their parents to become physicians. When the program was started in 1961, over 50 percent of the students were

Jewish, who, then too, were highly motivated. This percentage has steadily decreased, although we don't keep records on religion today. I don't know the complete significance of this, or whether it is true of other programs, but a number of our Jewish faculty confess of an inability to interest their children in medicine, as was once possible.

From Acceptance to Matriculation. Most applicants to medical school today seek entrance to slightly more than 9 schools, and the better students will be accepted by more than one school. There is usually no rush on a student's part to respond immediately because the applicants have their own list of preferences. A variety of factors enter into this decision, including a perception of the excellence of a school, geographical location related to home, tuition, availability of housing, climate, and how they were treated at their interview. Minority students, particularly, await financial information, such as scholarship support for tuition and living expenses, low interest loans and the like. Some schools have generated ample funds for minority support; others haven't. I once heard a Dean at Meharry complain that his brightest applicants more often than not now end up at a private school because of the financial support there provided.

On acceptance, some students will ask to defer matriculation for a year for whatever reason. We have two to four such examples each year and invariably grant the request because it usually indicates an ambivalence about becoming a doctor. In our experience about one-half of those who make such a request never matriculate.

One out of every two students who apply will be accepted into a U.S. school today. This is better than 10 years ago when only one in three was accepted. The change has come in part from nearly 7,000 fewer applicants and 2,000 more positions. The falloff in applicants has stabilized, but for the last 4 years the number of first-year positions has been slowly declining and is now about 300 less than the top enrollment of 17,320 in 1981. We are likely to see a continued decline in enrollment, perhaps a substantial one, as the economic factors affecting health care and education continue to unfold. The sad part is this: we know that many of the unsuccessful applicants would make good doctors. Some of them go abroad for medical education; some elect a year or two of graduate work and a future try for admission again, often successful; and the majority go into other careers.

Making Doctors

The Basic Science Years. Once matriculated and immersed in the basic sciences, it is quite possible for the aspiring physician to become submerged in lectures, laboratories and what seems like irrelevant science. It is important for first-year students to learn at the outset that they are being prepared to become physicians, and that goal must be kept constantly in front of them. When they go home for Thanksgiving or Christmas, friends and family will expect them to know something about medicine. A course in cardiopulmonary resuscitation with certification and a few hours in first aid by one of the surgeons —all in the first, or orientation, week of the freshman year—provides a good start.

Over the last 25 years, the focus of the basic science faculties has not necessarily been on medical student education. Further, the knowledge of basic scientists about the clinical relevance of what they teach is not usually great, nor do many of the clinical faculty work with basic scientists, something that might help to alleviate this problem. Student teaching in the first, and some of the second, year is too often looked on by faculty as an onerous task, taking time away from laboratory and research. As a result, they lecture on or demonstrate their own research and do not necessarily devote their time to what is important for medical students to know. Perhaps academia is itself partly responsible for this condition. Faculty members generally are promoted or acquire tenure by virtue of their research, grants and publications — not by the excellence of their teaching to students. I once pointed out to a basic science chairman that the students believed the faculty in his department to be particularly poor teachers, and I asked him to sit in on lectures and conferences, critique his faculty performance, and help them become better teachers. He responded that that was none of his business; he shouldn't be expected to monitor his faculty, and his administrative responsibilities, his research and Ph.D. students did not allow him time to attend those teaching sessions. I couldn't help but recall the late 30s and 40s when, in Pharmacology at the University of Pennsylvania, *every* faculty member was expected to be present at *every* pharmacology lecture; Drs. Schmidt, Comroe, Kety, and the other faculty watched and listened and the junior faculty was given a critique afterward. There was clinical relevance to those lectures, and nearly all the pharmacology faculty were physicians.

One of the major changes that have taken place in the last 15 years is the custom of preparing handouts to give to the students before a lecture. These usually duplicate what can be read in textbooks and often don't do it as well. Laborious and extensive to prepare, they are likely to be used again and again year after year. As a rule they are devoid of intellectual stimulation and encourage mere regurgitation of facts. I abhor handouts and have steadfastly refused to prepare them when asked to lecture. Lectures should stimulate and encourage students to look up related material in texts or in journals; they should deal with principles and provide material that is not yet published. I applaud the recent move of the National Board of Medical Examiners to computerize examinations and have them deal primarily with problem solving. This should stimulate the thought process of undergraduate as well as graduate students.

Basic science courses can be bewildering to many medical students, particularly in their first year. They arrive from diverse backgrounds, from colleges of varying caliber and with a varying quality of students. Some are better prepared than others, and yet at the end of every freshman course every student should have gained the same knowledge and principles as his fellows have. This means that some mark time while others can scarcely keep their heads above water. Entering students are led to believe that intellectually they are in the upper 1 percent in this country. That is hardly true. If it were, more than 6 percent of the upper 1 percent in this country would be medical students or residents, and that is unlikely. It doesn't take long for a freshman to realize the spread of intellectual capacity among his classmates, and to some it comes as a real shock. Students in the first two years need counselors, albeit for a variety of reasons. Good advisers make a world of difference in allaying fears, keeping the goal in focus, and generally lighting the pathway. They also lighten the load of psychiatrists and psychologists in the student health department.

The Clinical Years. Academic performance in the first two years is not a reliable predictor of performance in the clinical years. Some students who have done very well in basic science falter critically, while others who had mediocre grades in basic sciences excel in clinical courses. There may be several reasons for this, but the principal two that cause some to falter seem to be an inability to face up to clinical responsibilities and a difficulty in translating scientific fact into solving the problems of a patient. In other words, regurgitating

facts, yes; applying facts to resolve clinical problems, no. With time and counseling both problems can usually be corrected, but not always. On several occasions we have had to drop students in the third year for these reasons — always a stressful event.

If one observes carefully what goes on in clinical teaching departments today, it soon becomes obvious that the principal educational focus is on residents and resident training. A medical student is generally left to eavesdrop on residents in training and receives most of his instruction from junior house officers. Several important points need to be made here.

First, contact with *senior* clinical faculty in the first clinical year is usually infrequent; it is more frequent with *junior* faculty, and most commonly with residents. If medical students develop role models in the third year, it is most likely to be with residents because such contact is more prolonged and intimate. This is an important difference from the basic sciences, where contact is seldom prolonged even with junior faculty or postdoctoral fellows unless a student is following a research project or a summer preceptorship. The situation changes somewhat in the fourth year or whenever the student chooses an elective or preceptorship in the clinical arena because now the student is usually attached to one or more senior faculty and to senior residents or fellows.

Second, students contemplating a career in medicine, family practice or anesthesia are very likely to seek an elective clerkship in that specialty. This immediately rings bells in the minds of departmental faculty, because here is a potential recruit for a residency. Under such circumstances senior faculty are more likely to become involved in teaching students. I continued to practice and teach anesthesiology three mornings a week during my deanship, usually supervising residents, occasionally anesthetizing a patient myself on request. I could always tell when the faculty had identified a desirable recruit for anesthesia. The telephone would ring in the afternoon, a staff person making out a schedule would say, "Jim, we have a preceptee who is very good. Will you supervise him or her tomorrow morning?"

There is another reason from a student's point of view for electing certain preceptorships. He has already decided what specialty he wants to pursue and realizes that strong references will help; therefore, he is out to establish a relationship with senior faculty who can provide them. As an example, a fourth-year student came into my office and told my secretary that he wanted an appointment. In response to the

question as to its purpose, he said that he was applying for an anesthesia residency and wanted me to write a letter for him.

"Does he know you personally?"

"No."

"Then he won't write a letter."

"Do you mean if I do some cases with him, he will write?"

"Yes."

Off he went, and how he did it I don't know, but a call came later in the afternoon to ask if I would do three cases with him next morning.

Third, in what I have just said, it becomes obvious that a clinical department has a vested interest in attracting residents of superior quality who are going to teach students. Also, recognizing the part played by residents in teaching, it behooves the Dean's office to have strong clinical chairmen and faculties. A program with weak residents is apt to do a poor job of training medical students. Furthermore, programs with residents who cannot converse with ease in English or who don't want to teach will soon have trouble with students.

There is, of course, another reason why departments want strong residents: they provide service and are potential recruits for faculty. In this regard, residents are most valuable if they remain in the department for all the years of their training. Some specialties, as, for example, psychiatry and anesthesiology, require the initial postgraduate year to be spent in medicine or a similar patient-care specialty. Most strong academic departments of medicine don't want to allot first-year positions to residents who will go on to another specialty. Their solution, if there is one, is to make arrangements with an outlying institution to train these people, but rarely is the training as good as that offered by the mother institution. Personally, I think this is an abandonment of a teaching responsibility, and it is particularly unfortunate in the case of psychiatry, since psychiatrists are often accused of not knowing enough medicine. I am pleased to say that Northwestern's Department of Medicine takes seven first postgraduate year residents in anesthesia, and has since it was first asked to do so. It is patently clear that those completing our anesthesia residency today are infinitely better prepared than they were before this program was started. It is making better doctors.

Exposure to Technology in the Practice of Medicine

Medical students receive most of their clinical training in academic hospitals that are replete with the newest technology. In visiting these institutions around the country, I see very little difference in the equipment available. Students are led to believe that all of it is necessary to diagnose or to treat. A few weeks ago when working with one of our older gynecologists (older in this case meaning only several years younger than I am) I remarked that he seldom used the fiber-optic laparoscope, something most young gynecologists use frequently and, it often seems, without compelling reasons. He responded that he was used to making a diagnosis by history and physical examination and was satisfied with his success rate — besides, his methods saved his patients a great deal of money. Anesthesiologists used to work with a finger on the pulse and an eye on the operative area. Now a veritable wall of monitoring equipment is interposed between patient and anesthesiologist, and the patient often isn't watched. Twenty years ago patients couldn't die without an intravenous drip of Levophed; now if they die they are likely to have a Swan-Ganz catheter in place. I am sure, incidentally, that most of you have read "The Cult of the Swan-Ganz Catheter" written by Robin from Stanford and published in a recent issue of *Annals of Internal Medicine.*

I do not mean to espouse an abandonment of new technology, but I do think that students and residents need more instruction as to when the use of new technology is necessary, when it will not produce additional useful information, when it is an interference to care and an unnecessary cost and aggravation to patients. As the new generation of students become residents and residents become faculty, they develop an idea that *all* technology is necessary *all* the time. From my perspective, the all too common use of intraarterial monitoring, CVP and Swan-Ganz catheters is inappropriate. Believe me, my ideas along these lines are considered the rantings of an old-fashioned physician. If that is so — so be it!

Communication with Patients

Throughout most of the 1970s we heard from students that physicians did not communicate with patients — that they did not express enough concern for total care and did not listen or empathize enough with their patients. The implication was that all this would change when they became doctors. I regret to say that in my opinion such a

change has not occurred, and I see little difference in the situation today from what it has been all my professional life. Actually, a majority of physicians have always communicated reasonably well, and a majority of new graduates do about the same, but there certainly has been no dramatic change. For 13 years my admonition to graduating seniors concerned the importance of communication with associates as well as with patients, but there is no evidence that anything was changed by those words.

Conclusions

To use one of Julius Comroe's terms, let me look through the retrospectroscope and give you my comparison of the doctors trained in 1940 with those in 1985.

1. The average matriculant to medical school today is better prepared, has had the opportunity to gain more enriching experiences than were available 45 years ago, and has more accumulated information. However, he or she is under more stress, which explains, in part, the cheating that is alleged to go on.

2. The explosion of scientific knowledge and the marked diminution in the teaching of basic science by physicians has made the first two years more difficult for medical students. The fault seems to lie with an inability of basic science faculties to identify what is necessary for medical students to learn and how best to present it. There also is too little emphasis on problem solving today and too much on ability to regurgitate facts.

3. In some ways residency programs have gotten in the way of teaching medical students. Clinical teaching is, in the main, a function of residents, and exposure to senior faculty is minimized. Proselytizing of medical students is the order of the day — something that usually didn't occur when rotating internships were required.

4. Modern technology has complicated the training of medical students, making students turn too quickly to instruments and laboratory tests for a diagnosis, and leading to far more costly medical care. Having said that, I acknowledge that modern technology enables us to care for the critically ill and those at the extremes of life in a manner that would not have been possible 40 years ago. However, young physicians often have trouble in deciding when not to resort to this technology. Perhaps the high incidence of malpractice action contributes to this response. Readers who are devotees of "Peanuts" may

remember the strip where Marge was late in getting to school. Teacher reprimanded her and told her to look at the clock and see what time it was. Marge said she couldn't tell time from that clock. When asked why, she said because it had hands. When I saw that cartoon about a year ago, I thought that explained why I was retiring from clinical practice in August of this year.

5. All of us who teach medical students and participate in making doctors should remember that one of our foremost challenges must be to stimulate intellectual curiosity, to deal in principles, and to encourage proficiency in problem solving. One of the saddest castigations ever leveled at the medical profession came from Jack Millis, former Chancellor of Case Western Reserve University and Chairman of the Commission to Study Graduate Medical Education. His statement: "We can find no profession that practices so far below its intellectual capacity as does medicine." Unfortunately, many of us would agree.

On balance, I do not think the physicians we make today are better prepared for practice in today's environment than they were 45 years ago to practice in the environment of that era. When comparing the graduates of then and now, a difference may be apparent if the 1940s graduate has not had the opportunity or taken the time to keep up to date, or if the 1985 graduate was obliged to practice without all the modern refinements.

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Cataracts 1986: Facts Versus Myth

STEPHEN B. LICHTENSTEIN

Cataract surgery is the most frequently performed operation among Medicare patients in the United States, with as many as one million operations performed in the calendar year 1985. One large study of cataract prevalence in the United States demonstrated a 5 percent incidence in those aged 52 to 62 that increased significantly to 46 percent of those aged 75 to 85 years.[1] While significant advances in microsurgical technology over the last decade have resulted in profound changes in cataract management, an enormous amount of information in the lay news media has resulted in many misconceptions. This article is intended to review for the nonophthalmologist some of the current concepts regarding formation of cataracts, techniques of cataract extraction and approaches to postoperative visual rehabilitation.

What Is a Cataract and How Does It Affect Vision?

A cataract is a clouding or opacification of the normally transparent lens in the eye that interferes with the ability to focus light on the retina. Most cataracts are age-related, although they may occur in relatively young patients. Depending on the location and extent of lens opacification, symptoms of blurred vision and annoying glare around lights are common.

What Causes Acquired Cataracts?

While the incidence of cataracts is known to increase with age, risk factors, including metabolic diseases such as diabetes, exposure to certain medications (corticosteroids), radiation, trauma and other ocular diseases all may be associated with the development of cataracts. Although many mechanisms of proposed cataractogenesis are being evaluated, only the sorbitol pathway has actually been identified as a specific mechanism in some uncontrolled diabetics. In this pathway, excessive glucose in the lens is converted into sorbitol, resulting in rapid and sometimes irreversible lens opacification (sugar cataract). Most cataracts, however, seem to be the result of multiple risk factors

The Hira S. Chouke Lecture delivered on College Night, April 3, 1985.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 1 (1986); 19-25.
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leading to long-term oxidative damage to the lens and loss of transparency.[2] Of particular interest is the evidence that the incidence of cataracts and the rates of cataract extraction are higher in geographic areas that have a high level of exposure to sunlight, suggesting a role for near ultraviolet light (300 to 400 nanometers) in the photochemical generation of fluorescent pigments with resultant cataract formation. In addition to the direct photochemical action of ultraviolet radiation on the ocular lens, photobiologic damage can occur where certain drugs such as Psoralen compounds used in the treatment of psoriasis can accumulate in the lens and act as photosensitizing agents, thus enhancing the effects of ultraviolet light.[3]

Indications for Cataract Surgery: "Is My Cataract Ripe?"

Although it is impossible to predict cataract progression, lens opacities usually progress slowly and, even in their advanced stages, rarely affect the health of the eye. Therefore, the decision to proceed with surgery is elective and should be based on the individual patient's visual function. A "ripe" or mature cataract in which the lens is completely opacified and the vision is extremely poor in one eye can still be managed conservatively without surgery as long as the fellow eye has satisfactory vision and the cataract does not interfere with the patient's visual function. Medical indications for cataract surgery do, however, exist, as in patients with significant glaucoma or diabetic retinopathy where the cataract prevents evaluation or treatment of the retina, as well as a group of rare lens-related conditions where the lens itself may be related to chronic inflammation and glaucoma.

Cataract Management.

There is currently no method to reverse or prevent the development of a cataract, leaving surgery on the eye with the more advanced lens opacity as the only option available to the patient with visual symptoms. Most surgery is done on an outpatient basis under local anesthesia, as this approach has been found to be safe, less expensive and less stressful to most patients.

Until a few years ago, most cataracts were removed by the intracapsular cataract technique in which a cryoprobe was used to remove the entire lens within its capsule through a superior 160 degree corneoscleral incision. In recent years, with increasing use of the operating microscope and sophisticated instrumentation, extracapsular cataract

extraction, in which the nucleus and the cortex of the lens are removed but the posterior capsule is left in place, has gained wide acceptance. This approach appears to be more physiologic to the eye in that it maintains the anterior and posterior chamber separation and results in a statistically lower incidence of some complications such as macular edema, retinal detachment and corneal decompensation. In addition, the posterior capsule provides an improved method for fixation of an intraocular lens implant.

Phacoemulsification is a variation of the extracapsular cataract extraction procedure that allows removal of the cataract through a much smaller incision because of the instrument's ability to ultrasonically emulsify the lens nucleus. This approach is ideal in patients in whom the nucleus is soft, although the procedure requires increased technical expertise.

Recurrence

Slow, delayed opacification of the intact posterior capsule occurs in a large percentage of patients within two to three years of extracapsular cataract extraction. This opacification results in a return of visual symptoms often similar to those present from the cataract itself. Since 1982, this capsule clouding has been managed as an office procedure with minimal risks by opening the pupillary portion of the opaque capsule using an Nd:YAG (Neodymium YAG) laser with an almost immediate improvement in vision and no recurrence. Delaying this procedure for approximately one year after the original operation appears to maintain the reduced incidence of visually disabling macular edema, one of the main reasons for leaving the capsule intact at the time of surgery. The Nd:YAG laser can only be used to open the opacified posterior capsule and cannot be used to remove a cataract.

Visual Rehabilitation

Removing a cataract leaves the eye very farsighted, requiring a strong focusing lens in order to achieve useful vision. Cataract glasses have been extremely successful in improving visual function, although the thick lenses required are associated with significant image magnification and false spatial orientation. Many patients have difficulty adjusting to this visual distortion and, in addition, a cataract lens over one eye cannot be used with a thin lens over the other eye because of the resultant visual confusion. Contact lenses have significant opti-

cal advantages over cataract glasses because the focusing lens is close to the eye and there is minimal image magnification. This is usually well tolerated by the patient, and it is relatively easy to coordinate with the unoperated eye. Unfortunately, variable vision associated with soft contact lenses as well as problems with manual dexterity and ocular irritation have resulted in many unscheduled office visits and a less than expected patient satisfaction level.

Intraocular lens implants now represent the most common approach to visual rehabilitation of cataract surgery patients. The technology of implant manufacture and design has changed considerably since the first implant was inserted in the United States by Dr. Warren Reese of Wills Eye Hospital in 1952, and it is currently estimated that implants are used in approximately 90 percent of all cataract operations performed in this country. Since 1981, there has been a dramatic trend toward the use of posterior chamber lens implants in preference to those supported by the iris or wedged into the anterior chamber angle. These posterior chamber implants require support from the posterior capsule, thus requiring extracapsular cataract surgery. Many lenses today are now made with plastics that absorb ultraviolet light so that the retina in an eye that has cataract surgery receives the same protection from this light that is provided by the natural lens. Axial length and corneal curvature measurements are used to calculate the strength of an implant for an individual eye so that the postoperative refractive error of the operated eye will be matched with that of the unoperated eye.

Complications of Cataract Surgery

Cataract surgery is one of the most successful of all operations, with excellent visual results obtained in as high as 95 percent of patients. However, no operation is without risk. Although rare, immediate postoperative complications include hemorrhage, infection and glaucoma. Later complications, which may not occur for months or years, include retinal macular edema, retinal detachment and corneal edema, all of which may occur following uncomplicated surgery. Even less common are risks associated with the use of an intraocular lens implant, including decentration or chronic inflammation.

Postoperative Care

The patient may be aware of an improvement in vision on the day following surgery, although the incision beneath the upper eyelid requires a minimum of 8 to 10 weeks to stabilize before a final spectacle correction is dispensed to balance both eyes together since the implant is not a bifocal lens. Topical antibiotic and corticosteroid drops are used for various periods postoperatively, and physical restrictions are minimal, although ocular protection is encouraged to avoid blunt trauma. Heavy straining should be avoided in the early postoperative period. Most incisions are closed with 10-0 nylon sutures and covered by conjunctiva. The sutures begin to absorb approximately eighteen months after surgery and usually do not require removal.

The visual results following cataract surgery depend on the status of the remaining components of the visual system. A clear cornea is necessary to focus light finely on the macular area of the retina which is responsible for fine vision. Unfortunately, poor macular function owing to age-related degenerative changes is so common in elderly patients that successful surgery results in visual improvement only to the level permitted by the macular function. Recent technical advances in instrumentation have permitted a better evaluation of this problem preoperatively so that in many cases the visual potential of an eye with a cataract can be discussed with the patient prior to surgery.

What About the Other Eye?

Successful surgery with improved vision in one eye often results in a significant improvement in visual function for the patient. Surgery on the fellow eye is again elective and can often be deferred indefinitely, since the patient's ability to maintain independence in the future is no longer threatened. Many patients, however, are bothered by their inability to use both eyes together under certain circumstances, and elective surgery in the fellow eye is certainly warranted after an appropriate interval in these patients.

Future Prospects

Research efforts will continue to be directed toward elucidating specific mechanisms of cataractogenesis in an attempt to develop a medical approach to retard, reverse or actually prevent cataract formation. Intraocular lens implants will continue to be the method of choice in visual rehabilitation, with newer materials and designs developed that allow sufficient flexibility to permit implantation through very small incisions. The number of cataract extractions and intraocular lenses implanted will increase as the 65-year and older population continues to increase at a faster rate than that of the general population. Additional refinements in microsurgical instrumentation will ideally reduce the risks of surgery to its lowest acceptable level.

Summary

Cataracts are a common problem. They usually progress slowly and rarely affect the health of the eye. The decision to proceed with surgery is elective and should be based on an individual's level of visual frustration. Extracapsular cataract extraction with posterior chamber intraocular lens implantation is the most common surgical approach in managing cataracts, with the use of a laser confined to the management of delayed opacification of the posterior capsule with the Neodymium: YAG laser if visual symptoms are present. While any operation has risks, cataract surgery is highly successful, with appreciable visual improvement the rule in most patients, depending on the functional status of the cornea and retina.

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Rationing Health Care: Tragic Choices

BERNARD S. BLOOM

For decades in health care we have proceeded under the assumption that resources were not scarce, that society was willing to allocate whatever resources the medical profession deemed in our best interest, including more physicians, hospitals and fancy expensive technology, and that difficult choices did not have to be made from among the array of all possible options. Physicians have been able to provide essentially everything to the individual patient that might be of even the slightest possible benefit, irrespective of cost. Even as cost issues became increasingly important, physicians claimed that cost was society's problem. The physician has said, "Don't bother me about cost; the patient has come to me at a time of crisis, and I must do everything possible to cure, to relieve, to prevent." Certainly this is a laudable sentiment grounded over the millennia in the unique physician-patient relationship, and in the physician's first responsibility—to the patient above all else. During those infrequent times when I or my family are patients, we certainly want the physician to consider us first. But events in the wider world around us are signaling the fact that medicine is not going to be able to continue in the future as it has in the past.

With all the discussion of costs, where exactly are we with them, where are we heading and what do they all mean? However one views the growth of medical care expenditures, there is no denying that they have been phenomenal, rising nearly tenfold in 35 years *(Fig. 1)*. In 1985 expenditures are expected to be over $400 billion or 11.2 percent of gross national product. In 1950 they were $12.7 billion and 4.4 percent of GNP, while in 1965, before enactments of Medicare and Medicaid legislation, they were $39 billion or 6 percent of GNP. In 1950 we spent $82 per capita, in 1965 $198 per capita and in 1985 over $1,600 per capita.

There are at least four important reasons for increased resource use in medical care. First, prices of goods and services have risen in all sectors of the economy, and the medical care sector is no exception.

Presented at the Fourth Series of Free Lectures for the Public, Medicine and Society, *The College of Physicians of Philadelphia, October 15, 1985.*

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 1 (1986): 27-35.
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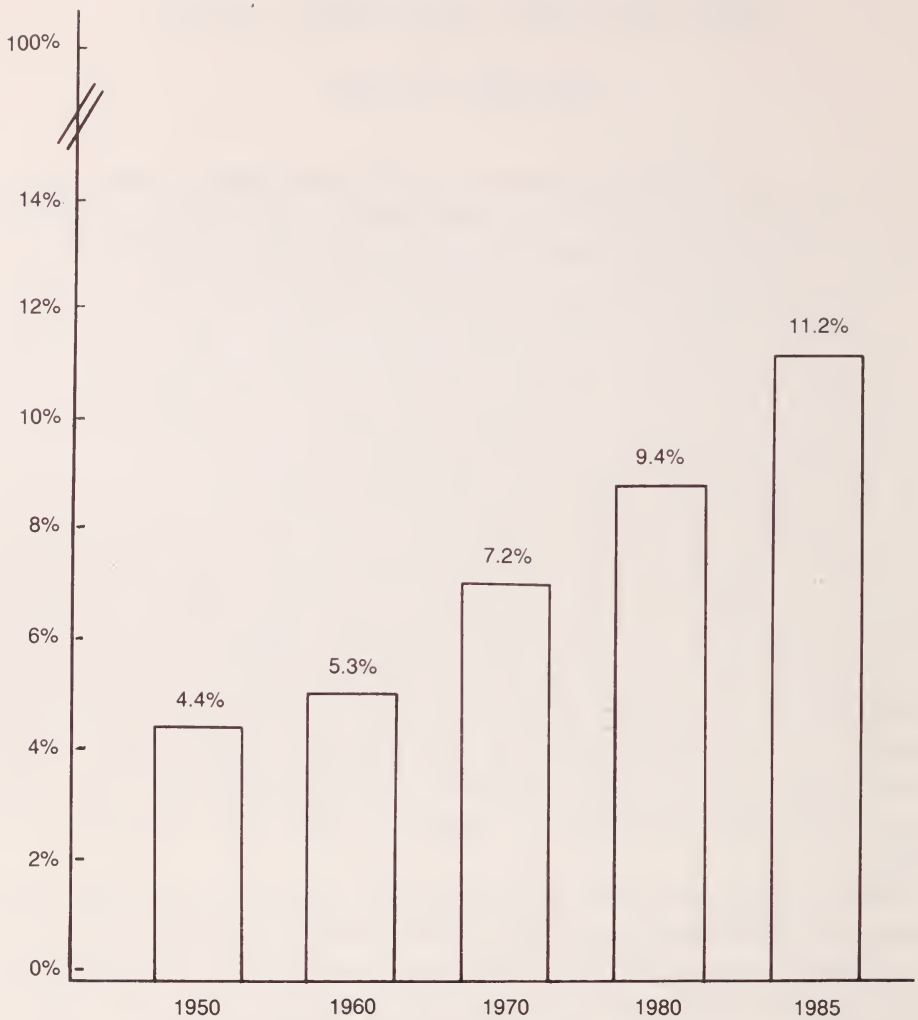

Figure 1. Health care expenditures as a percent of Gross National Product.

Quite simply we have experienced inflation over time. Second, the population has gotten older. In 1950 8.1 percent of the population was 65 and older; by 1985 it has grown to approximately 11.3 percent. Birth rates have been declining since the early 20th century with the exception of the baby boom following World War II. Dramatic increases in life expectancy have occurred, allowing many to reach old age. Third, there has been increasing use of technology, including both more use of old technology, such as ECG and blood counts, and wider use of such new technology as cardiac catheterization, computerized

axial tomography, and the lithotripter. Last has been the increasing intensity of services. Expanding use of intensive care is but one example.

Additionally, the mix of expenditures has changed *(Fig. 2)*. In 1960 the hospital accounted for 30 percent of all medical care expenditures; physicians, 22 percent; drugs, 13.6 percent; and nursing homes, 1.5 percent. In 1983 hospitals consumed 41.4 percent of all expenditures, nursing homes had grown to use 8.1 percent, physician fees accounted for 19.4 percent, and drugs declined to 6.7 percent. The shift of

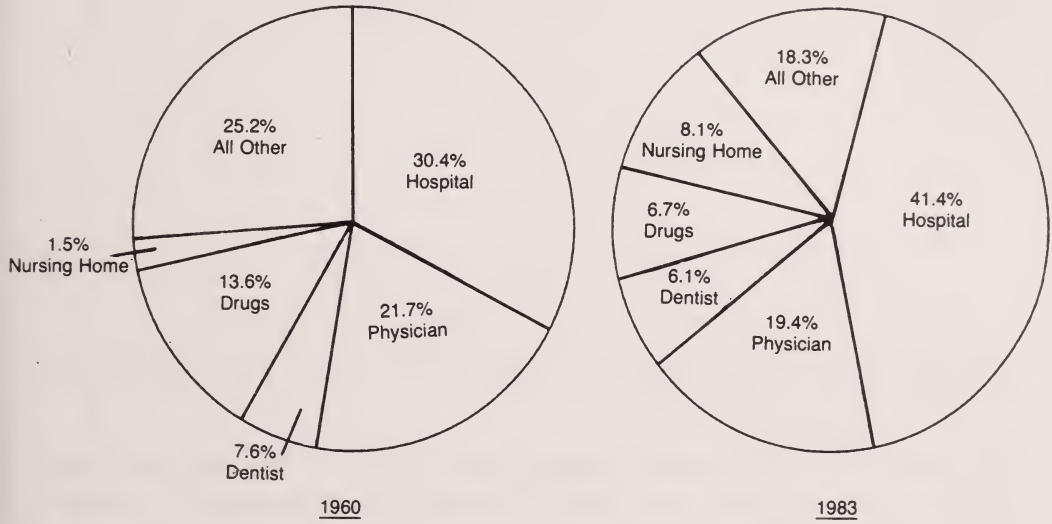

Figure 2. Percent distribution of medical expenditures.

resource to institutional care, hospitals and nursing homes is well documented by this figure. If this growth continues in the future as it has over the past 30 years, by the end of 2012 medical expenditures will consume 25 percent of gross national product, by 2034 50 percent, and by 2056 every dollar of the gross national product will be spent on medical care *(Fig. 3)*.

This last exercise is, of course, absurd. It is a bit of hyperbole used to raise the question, "How is it possible that we have been able to spend increasing proportions of our national wealth for medical care?" We all know that we have only 100 percent of our personal budget that we can spend on the things we need and desire; we never can have everything we want — all the cars, houses, vacations, etc., that

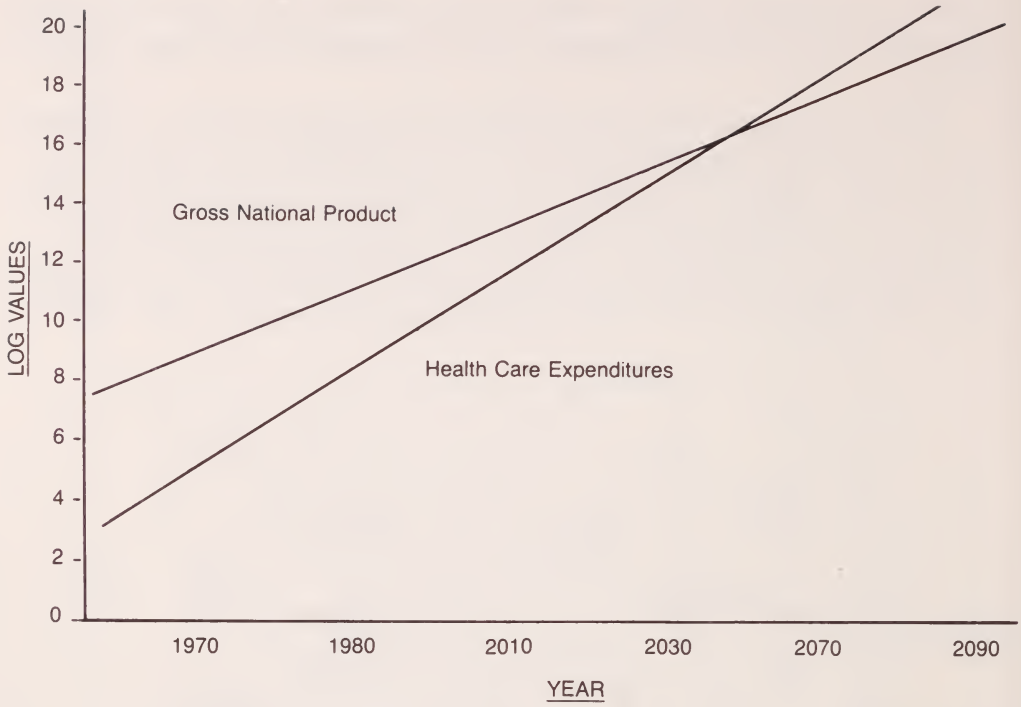

Figure 3. Relationship of health care expenditures and Gross National Product, 1970 to 2070. Log scale.

we would like. If we want to spend more money in one area, we must spend less in another. The same economic truth applies to societal expenditures — there is only 100 percent of the national budget that can be spent. If we spend more on medical care, we must spend less on education, the post office, societal welfare and so forth.

There are three basic reasons we have been able to spend more on medical care. First, personal income rose consistently. Second, productivity in most economic activities was increasing. And, last, relative prices of all other goods and services, particularly necessities, were falling *(Fig. 4)*. The costs of personal necessities, food, clothing, housing, transportation, were falling well into the 1970s — all except medical care. Unfortunately, the recent trends have changed. Prices today are no longer falling, not falling quite so rapidly, or actually increasing. For the foreseeable future, it appears that these new trends will continue.

The analogy of the limits of the personal budget applies to the wider society, as well. Resources are finite, and only 100 percent of national

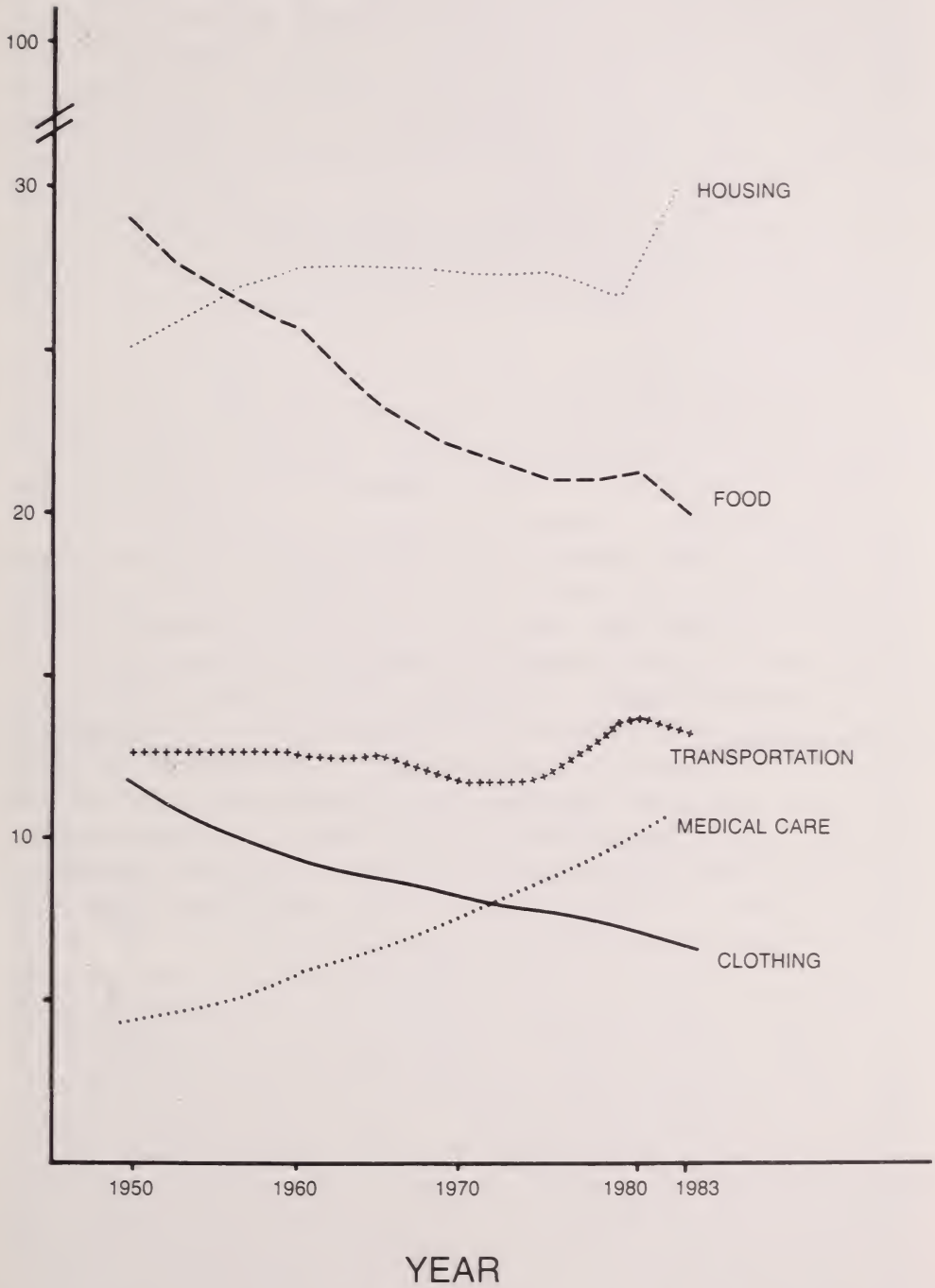

Figure 4. Personal necessities as a percent of disposable income, 1950–1983.

income can be spent. Medicare and Social Security now account for approximately 50 percent of the Federal budget. The Federal government has, for at least the past eight years, tried to reduce its budget, with somewhat less success than some would like. For example, reductions have taken place mostly in human and social services while the defense budget dramatically increased. Medicare and Social Security have not been attacked, but it seems likely that they too will feel the scalpel, if not the ax. The imposition of a prospective payment system based on diagnostic related groups for inpatient care is the most glaring recent effort at controlling Federal medical care expenditures.

The most immediate result of budget reduction efforts is the restriction of the Medicare budget, soon to be followed by the Medicaid budget, and probably by private insurance schemes as well. Medicare and Medicaid now account for approximately 35 percent of all medical expenditures. Thus, the impact of publicly funded programs can be enormous. How they change will, of course, profoundly affect changes in private programs as well. At the very least, physicians and other health care providers are going to be asked more insistently to make choices, *choices based primarily on monetary considerations.*

The choices physicians are making now because of the DRG-based prospective payment system for Medicare recipients are not terribly difficult; for example, the substitution of a less expensive for more expensive medication, reducing hospital length of stay and so forth. In the main, physicians can still prescribe almost any care they believe can be of even the slightest potential benefit to the patient, still essentially irrespective of cost. Physician behavior has been rather little affected to date by the prospective payment system.

While physicians are currently only being *asked* to consider the mildest form of rationing, there are other forms of rationing going on. For example, there are about 30 million people with no health insurance, and an additional approximately 20 to 25 million who are underinsured. Many are the unemployed whose medical insurance benefits have lapsed, and many are the working poor; both may have assets or income in excess of eligibility limits for Medicaid. Additionally, only 50 percent of people eligible for Medicaid use it. To a large extent we are back to where we were 35 years ago when money was the medical care rationing device; those with funds (or insurance) obtained whatever was needed, while those without did without.

The choices that physicians may be asked to make in the future may be inimical to their professional training and perspective. It seems likely that changes in the payment system will eventually force some hospitals to close or reduce their size and staff. At the same time, the number of physicians, now increasing by about 17,000 new practitioners annually, will force at least a modicum of competition for patients and dollars.

The Graduate Medical Education National Advisory Council estimated in 1980 that by 1990 there would be 536,000 practicing physicians with an excess of 70,000.[2] In 1984 there were already about 510,000 practitioners. At the present rate of net growth (influx of new physicians less those who retire or die), we will have about 570,000 physicians by 1990. The payers may use the abundant supply of physicians to apply pressure for physicians to modify the cost and type of care they deliver. Whether these will be detrimental to the public is difficult to predict.

There is no question that physicians will have to make choices. For example, infant mortality is now very low, about 11 per 1,000 live births per year. The growth of expensive neonatal care technology during a time of low mortality means that the marginal cost per life saved will be great and only small gains in mortality reductions can be expected. It costs about $80,000 to save a child weighing 1,000g at birth. Will our society accept an asymptote, or will we continue to pay for ever smaller gains at ever increasing costs?

Society must decide where the money will come from. Remember, we are faced with a zero-sum situation; we must give up something in order to gain something. What medical care are we prepared to give up in order to have neonatal care? Treatment for the elderly, immunization, magnetic resonance imaging? Are we willing to substitute more medical care for less defense, postal services or education? This is the ethical and economic dilemma. Which of two children gets neonatal intensive care when resources are limited and not all babies can have everything of possible benefit is a medical question. For the medical profession the concern should be that the society will foist off on it the responsibility to make the societal choices — the ethical and economic choices in addition to the medical ones — and then disapprove of whichever choices are made.

When diagnostic related groups became the basis for paying for medical care for the elderly, no one recognized the myriad effects.

The only ones discussed were those regarding saving money. When money is spent the economist asks, "What benefit is being derived? On what alternatives could this same money be spent? And could even greater benefit be provided?" In saving money we need to ask the corollary questions, "What will we do with the savings? What benefits will be derived from them? And will the savings provide greater benefits than alternative uses?"

Let me return to the earlier example of infant mortality, an example I chose consciously because it is difficult to quarrel with saving the lives of babies. Mortality was reduced from about 200 per 1,000 live births per year in 1750 to between 7 and 11 per 1,000 per year now in all high income countries. Impressive investments were made to achieve this goal—investments in public health, sanitation, nutrition, education, and medical care. The society, through our political representatives, made these choices. Society, as represented by its elected and appointed officials, was quite willing to make the easy decisions of implementing and expanding health and medical care programs in times of rapid economic growth—in essence, something was provided to everyone. Now the economy grows slowly, and public budgets are under increasing strain. Reduction is the budgetary objective, and the onus of decision making is being placed on others. Society (and its elected representatives) have now stepped away from making the choices regarding the allocation of its scarce resources to medical care and is asking the medical profession to make these choices.

Long ago society gave physicians the responsibility for its health, simultaneously to do the greatest good and least harm. I suspect that it will expand this mandate and ask physicians to make the tragic choices regarding who shall live and who shall die, who shall have access to care and who shall not, who shall obtain coronary artery bypass graft and who shall not. It seems likely that those who have the money or insurance coverage will be able to continue to reap the benefits of the burgeoning results of medical research. The uninsured, the underinsured and the publicly insured will be asked initially to carry a disproportionate burden. Of nearly equal tragic proportion is the fact that physicians will be required to make these difficult decisions—decisions for which they are ill equipped, ill prepared, poorly educated and which they are probably unwilling to make. This will be the major two-fold tragedy of the changing nature of our medical care system.

The classical, free-enterprise economist would devise a competitive system in which resources are allocated to the most efficient — i.e., lowest cost—use. We have previously decided, at least to some extent, that money should not serve as the means of access to medical care. In fact, for 20 years we threw money at problems and obtained a marvelous, but terribly inefficient and costly, system of specialty medicine dependent on expensive technology. The contraction and change of such a system have begun. And in most democratic societies, when this occurs the body politic shuns making the difficult choices of who will no longer have, or have reduced amounts of, that which they had before. Fortunately, the body politic has the medical profession on whom it can foist off the decision-making process.

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George E. de Schweinitz, M.D., And the de Schweinitz Lecture in Ophthalmology At the College of Physicians of Philadelphia, 1938–1985

HAROLD D. BARNSHAW

On November 5, 1890, the Section on Ophthalmology of the College of Physicians of Philadelphia was established. A series of annual lectures honoring Dr. de Schweinitz was sponsored by the section after his death in 1938. Forty-seven of these have been delivered, and in May 1984 the section directed the author to prepare a report honoring the memory of Dr. de Schweinitz and to draw up a complete list of the de Schweinitz Lectures with their titles and speakers.

Biographical Sketch

George Edmund de Schweinitz was born in Philadelphia on October 26, 1858, the son of Edmund de Schweinitz, bishop of the Moravian Church and a lineal descendant of Count Zinzendorf. His paternal grandfather, Ludwig David von Schweinitz, was a distinguished scholar and a famous botanist. His mother, Lydia Tschirschky, was of noble Silesian stock.

When he was a boy his family moved to Bethlehem, Pennsylvania, where he spent his early life. He attended Moravian College, receiving a B.A. degree in 1876 and an M.A. in 1878. During the next two years he taught at Nazareth Hall, adding to his meager worldly wealth and improving his teaching ability. The following year he matriculated at the Medical School of the University of Pennsylvania. There he immediately distinguished himself by his scholarship, finishing first in his class with a 98.7 average. He was popular with his fellow students, who, recognizing his talent for leadership, elected him president of the class.

After graduation, he spent a year of internship at the Children's Hospital in Philadelphia and two years, 1881 to 1883, at the Hospital of the University of Pennsylvania. From 1883 to 1888 he served as prosector of anatomy under Dr. Joseph Leidy at the Medical School.

Dr. William Norris, first professor of ophthalmology at the University of Pennsylvania, persuaded Dr. de Schweinitz to take up the study of the then budding specialty of ophthalmology. This led to two appointments in 1885: ophthalmic surgeon to the Children's Hospital

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and ophthalmologist to the Orthopaedic Hospital and Infirmary. It was there that he became associated with Dr. Weir Mitchell. In 1887 de Schweinitz was appointed ophthalmic surgeon at Philadelphia General Hospital and, in 1891, professor of ophthalmology at the Polyclinic and College for Graduates (The Graduate School). Dr. de Schweinitz was a charter member and later chairman of the Section on Ophthalmology of the College of Physicians. He also served as chairman of the Section on Ophthalmology of the American Medical Association from 1896 to 1897.

In 1892 Dr. de Schweinitz resigned from the University of Pennsylvania to become clinical professor of ophthalmology at Jefferson Medical College, where he was appointed professor of ophthalmology in 1896. On the retirement of Dr. William Norris in 1902, de Schweinitz returned to the University of Pennsylvania. Dr. Norris had established a Chair of Ophthalmology at the University as a center for teaching and research in the field. Dr. de Schweinitz ably continued this tradition, which has been followed by Dr. Thomas Holloway, Dr. Francis Heed Adler, Dr. Harold Scheie, and Dr. Myron Yanoff. He served at the University of Pennsylvania for twenty-two years before retiring in 1924 because of the age limit. He was then elected Emeritus Professor of Ophthalmology.

During his years at the University of Pennsylvania Dr. de Schweinitz contributed over two hundred papers on ophthalmological subjects. His writings were noted for their clarity and still remain as examples of proper style for the presentation of medical papers. In 1894 he was the recipient of the Alvarenga Prize given by the College of Physicians of Philadelphia for his still famous essay on "Toxic Amblyopias." In 1923 the Société Française d'Ophtalmologie awarded him a bronze plaque for his paper on "Ocular Manifestations of Focal Infections." In this same year he also became the first American chosen to give the Bowman Lecture before the Ophthalmological Society of the United Kingdom.

Owing to his personality and oratorical ability, Dr. de Schweinitz was elected to many distinguished positions and was a member of all the important world ophthalmological societies. From 1910 to 1913 he was president of the College of Physicians of Philadelphia. In 1916 he was elected president of the American Ophthalmological Society and in 1922 was the first and up to the present time the only ophthalmologist to serve as president of the American Medical Association.

Fig. 1. Sir William Osler at the Dispensary of the Orthopaedic and Nervous Hospital. Shown (left to right): Dr. James Cattell, Dr. Guy Hinsdale, Dr. I. P. Willits, Dr. J. K Mitchell, Dr. George de Schweinitz, Mrs. Green, Sir William Osler, Miss Clara Dalziel, Dr. Joseph Otto, and Miss Jane Dalziel. (Courtesy of the Historical Collections of the College of Physicians of Philadelphia.)

In 1887 Dr. William Osler (Fig. 1) suggested that he write a textbook on ophthalmology. This, the first complete textbook on the subject written by an American, went through ten editions. During these active years Dr. de Schweinitz was in his office at 8:00 A.M., working often to midnight. His huge practice included wealthy and prominent citizens in the Philadelphia area. Doctors in the United States and abroad referred patients to him, among them Woodrow Wilson, then president of the United States.

Dr. de Schweinitz had a notable military career in the First World War. He was commissioned as a Major and was assigned to the Office of the Surgeon General in charge of ophthalmology. He was quickly promoted to the rank of Brigadier General in the U.S. Army Reserve. He also served as an inspector and consultant to ophthalmological services in the United States and France. Dr. Derrick Vail, in his introduction to the Eighth de Schweinitz Lecture on scleral resection, gave a graphic description of Dr. de Schweinitz's contribution to the ophthalmological service of the Army in the First World War and stated that if de Schweinitz's suggestions had been followed in the Second World War, much confusion would have been avoided. One of his main proposals was to station a trained ophthalmic surgeon with the front-line units.

Fig 2. Portrait of George E. de Schweinitz, M.D., Professor of Ophthalmology at Jefferson Medical College. (Courtesy of the Thomas Jefferson University Archives.)

Another lecturer, Dr. Frederick Verhoeff, described de Schweinitz as the most handsome ophthalmologist (Fig. 2) and the most fluent speaker he had ever known. He was a sought-after after-dinner speaker. In 1910 he was invited to chair the dedication of the present building of the College of Physicians of Philadelphia. Though a dominant figure at most gatherings, he was so considerate of his colleagues that they loved him.

Honors were heaped on him. His honorary degrees included L.L.D.'s from the University of Pennsylvania and Moravian College and three D.Sc. degrees: from the University of Michigan, Temple University, and Harvard University.

He died in 1938 at the age of 79 from complications of arteriosclerosis and was buried in the Nisky Hill Cemetery, Bethlehem, Pennsylvania. This handsome, dedicated physician never married. He devoted his life to ophthalmology and left most of his estate to the Department of Ophthalmology of the University of Pennsylvania.

Dr. de Schweinitz was admired and respected by his colleagues, who looked to him as the most renowned ophthalmologist of his era. We, the living, have been fortunate to have had so inspiring a leader during the birth and development of a new specialty, and it is fitting that a series of lectures should be dedicated to him.

A Brief Account of the Founding of the Section on Ophthalmology

In 1864 George E. de Schweinitz was only six years old, but great changes were beginning in the field which was to occupy so much of his life's energy. The founding of the American Ophthalmological Society that year signaled the arrival of ophthalmology as a special branch of medicine. General recognition within the medical profession was slow in arriving, however, and almost thirty years passed before formation of a section on ophthalmology was approved by The College of Physicians of Philadelphia. By this time Dr. de Schweinitz was already an influential Fellow of the College.

Although there had been special hospitals for the treatment of eye disease since the early 1820s, patients were treated by general physicians and general surgeons who did not usually confine their practices to treatment of the eye. It was not until after the Civil War that a significant number of physicians recognized the advantages of confining one's practice to a single organ system.

In ophthalmology this trend began early. A separate Department of Ophthalmology was first established in the United States in 1860 at the Miami Medical College in Cincinnati, Ohio. Other universities followed, and a Department of Ophthalmology at the University of Pennsylvania was founded in 1874 under the chairmanship of William Fisher Norris. These were years of enormous advances in the science of this infant specialty, and much of the progress came from Europe. Nevertheless, a few giants in America made a great impact on ophthalmology between 1850 and 1870 and came to be known as the fathers of the specialty in America.

The College of Physicians of Philadelphia, although founded in 1787, was slow to recognize the impact of specialties on the medical scene. In its early days all physicians were generalists. The practice of medicine was at a relatively primitive level, and it is easy to understand how these physicians might resist the idea of change. Inevitably, however, a movement toward the organization of specialty groups did

begin, perhaps in the early 1870s. On February 1, 1870, The Ophthalmological Society of Philadelphia was founded at the Pennsylvania Hospital under the leadership of Isaac Hayes, Edward Hartshorne, Thomas Morton, William F. Norris and George C. Strawbridge, who had felt the need to have periodic meetings to discuss matters of concern to oculists. This group, with no connection to the College of Physicians of Philadelphia, received little support and after a short time was dissolved.

Mindful of this failure, leaders in the specialty soon recognized that any future organization should come under the aegis of the College of Physicians. In 1890, feeling that the time had come, Dr. Edward Jackson, an ophthalmologist, put forward a resolution which was to be the first step in the establishment of the Section on Ophthalmology. It called for permission of the College to use one of its rooms for monthly meetings of ophthalmologists. The request was granted and, at an organizational meeting on November 18, 1890, William F. Norris was chosen president; William Thomson, vice-president; and Edward Jackson, secretary. The charter members of the Section were Thomas H. Fenton, H. Earnest Goodman, Howard Forde Hansell, George C. Harlan, Edward Jackson, William F. Norris, Charles A. Oliver, Francis M. Perkins, B. Alexander Randall, Samuel D. Risley, John B. Roberts, George E. de Schweinitz, Charles Shaffner, Charles Herman Thomas, and William Thomson.

Although the group had permission to use a room, there was clearly no approval by the College for the establishment of a separate section under its bylaws. This issue was to become the subject of sometimes acrimonious debate within the councils of the College for months to come. A number of other groups were anxious to join the ophthalmologists in the push for specialty sections.

Edward Jackson became the spokesman for all of these and on December 2, 1891, introduced the following resolution:

"Resolved that the Council of the College be requested to consider the subject of a general plan for the formation of sections of the College for the better cultivation of special branches of medical and surgical science." Although Dr. Jackson was denied passage of this resolution, he continued to press for rules for the creation and government of sections. It took two years, but finally the College did accept the concept, and in 1893 sections on Orthopaedic Surgery, Otology and Laryngology and Ophthalmology were formed. The Or-

thopaedic and Otology Sections have since been disbanded, and of these original sections, Ophthalmology alone remains. Other sections were organized, notably the gynecologists in 1895, but that group was dissolved. Sections on General Medicine and Medical History and a section on Public Health, Preventive and Industrial Medicine came into being later.

Activities of the Section on Ophthalmology have been varied, and its success has been inconsistent. In its early years, when it was the only viable organization of the specialty, meetings were well attended and discussions were vigorous and enthusiastic. Papers were of considerable significance, and many illustrious members became leaders in national and international ophthalmic circles. A list of their names is a veritable Who's Who in Ophthalmology. In more recent years, as communication and travel have become much easier and professional organizations more numerous, the need for meetings of the type provided by the Section has diminished.

At the time of this writing, three meetings of the Section are held each year. The Annual de Schweinitz Lecture is under the direct sponsorship of the Section on Ophthalmology. The Edmund B. Spaeth Lecture is cosponsored by the Section on Ophthalmology and the Ophthalmic Club of Philadelphia. The third meeting, devoted to the Francis Heed Adler Lecture, is under the joint auspices of the Section on Ophthalmology and the University of Pennsylvania Alumni Ophthalmological Association. Most members of the Section believe that the functions it provides serve a very useful purpose and should be maintained.

Cadbury–307
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De Schweinitz Lecturers

1938 *Edward B. Jackson, M.D.,* Denver, Colorado. Professor of Ophthalmology, Founder of the Section on Ophthalmology, College of Physicians of Philadelphia. "The Development of Modern Ophthalmology in One Lifetime."

1939 *Walter B. Parker, M.D.,* Detroit, Michigan. Emeritus Professor of Ophthalmology, University of Michigan. "Second Review of the Published Records of Severe Uveitis With Associated Alopecia, Poliosis, Vitiligo and Deafness."

1940 *Frederick H. Verhoeff, M.D.,* Boston, Massachusetts. Professor of Ophthalmology, Harvard University. "Occlusion Hypertropia."

1941 *Harry Friedenwald, M.D.,* Baltimore, Maryland. Chairman, Department of Ophthalmology, University of Maryland School of Medicine. "The Path of Progress of Ophthalmology."

1942 *Walter R. Lancaster, M.D.,* Boston, Massachusetts. Professor of Ophthalmology, Dartmouth College. "The Story of Asthenopia; The Important Part Played by Philadelphia; What of the Present and the Future?"

1943 *Henry C. Haden, M.D.,* Houston, Texas. Consulting Ophthalmologist, Hermann Hospital. "Concerning the Relations of the Developing Optic Nerve to the Recessus Opticus and Hypophysis."

1944 *Edward C. Ellett, M.D.,* Memphis, Tennessee. Chief of Staff, Memphis EENT Hospital. "Some Considerations of Unilateral Exophthalmos."

1945 *Derrick Vail, M.D.,* Chicago, Illinois. Chairman, Department of Ophthalmology, Northwestern University Medical School. "The Scleral Resection (Eyeball Shortening) Operation."

1946 *Algernon B. Reese, M.D.,* New York, New York. Professor of Ophthalmology, Institute of Ophthalmology of the Presbyterian Hospital, Columbia University. "Pigmented Tumors."

1947 *Bernard Samuels, M.D.,* New York, New York. Professor Emeritus of Ophthalmology, Cornell University Medical School. "Necrosis of Intraocular Tissues."

1948 *William L. Benedict, M.D.,* Rochester, Minnesota. Chairman, Department of Ophthalmology, Mayo Clinic. "Surgical Treatment of Tumors and Cysts of the Orbit."

1949 *Arthur J. Bedell, M.D.,* Albany, New York. Professor of Ophthalmology, Albany Medical College. "The Macula in the Elderly."

1950 *Parker Heath, M.D.,* Boston, Massachusetts. Professor of Ophthalmology, Harvard University Medical School. "Tumors of the Iris; Pathology and Treatment."

1951 *Peter C. Kronfeld, M.D.,* Chicago, Illinois. Professor and Chairman, Department of Ophthalmology, University of Illinois College of Medicine. "Tonographic Studies of Early Glaucoma."

1952 *Francis H. Adler, M.D.,* Philadelphia, Pennsylvania. Professor of Ophthalmology, University of Pennsylvania. "Pathologic Physiology of Strabismus."

1953 *Alan C. Woods, M.D.,* Baltimore, Maryland. Professor of Ophthalmology, The Johns Hopkins University School of Medicine. "The Pathogenesis and Treatment of Ocular Tuberculosis."

1954 *Conrad Berens, M.D.,* New York, New York. Professor of Ophthalmology, New York University. "Results of Operations for Glaucoma with Special Reference to Cycloelectrolysis and Irido-corneo Sclerotomy."

1955 *Alfred Cowen, M.D.,* Philadelphia, Pennsylvania. Professor of Ophthalmology, University of Pennsylvania Graduate School of Medicine. "Observations on Ocular Pigment and Pigmentation."

1956 *Alson E. Braley, M.D.,* Detroit, Michigan. Professor of Ophthalmology, Wayne State University. "Central Serous Choriodosis Associated With Amebiasis."

1957 *John H. Dunnington, M.D.,* New York, New York. Professor of Ophthalmology, Columbia University. "Clinical Manifestations of Defective Ocular Wound Healing."

1958 *A. Edward Maumenee, M.D.,* Baltimore, Maryland. Professor of Ophthalmology, Wilmer Ophthalmological Institute, Johns Hopkins University. "Causes for Opacification of Corneal Graft."

1959 *Lorenz E. Zimmerman, M.D.,* Washington, D.C. Ophthalmic Pathology, Armed Forces Institute of Pathology. "Pigmented Tumors of the Optic Nerve Head."

1960 *Frank B. Walsh, M.D.,* Baltimore, Maryland. Professor of Ophthalmology, Wilmer Eye Institute, Johns Hopkins University. "Concerning the Optic Chiasm; Selected Pathologic Involvements and Clinical Problems."

1961 *Ludwig von Sallman, M.D.,* New York, New York. Professor of Ophthalmology, Columbia University. "Cell Proliferation in Ocular Tissues."

1962 *C. Wilber Rucker, M.D.,* Rochester, Minnesota. Professor of Ophthalmology, Mayo Foundation. "Abducens Paresis."

1963 *Edward Rose, M.D.,* Philadelphia, Pennsylvania. Professor of Medicine, University of Pennsylvania. "The Eye and the Endocrines."

1964 *Kenneth Swan, M.D.,* Portland, Oregon. Professor of Ophthalmology, University of Oregon. "Surgical Anatomy of Angle Closure Glaucoma."

1965 *John M. McLean, M.D.,* New York, New York. Professor of Ophthalmology, Cornell University. "Cryosurgery."

1966 *Arthur Gerard deVoe, M.D.,* New York, New York. Professor of Ophthalmology, Columbia University. "The Management of Fungus Keratitis."

1967 *David C. Cogan, M.D.,* Boston, Massachusetts. Professor of Ophthalmology, Harvard Medical School. "The Sphingolipodoses and the Eye."

1968 *Edwin B. Dunphy, M.D.,* Boston, Massachusetts. Professor of Ophthalmology, Harvard Medical School. "Alcohol and Tobacco Amblyopia—An Historical Survey."

1969 *Edmund B. Spaeth, M.D.,* Philadelphia, Pennsylvania. Professor of Ophthalmology, University of Pennsylvania Graduate School of Medicine. "An Analysis of Congenital Ptosis: Causes, Types and Factors Important to Its Correction."

1970 *Michael J. Hogan, M.D.,* San Francisco, California. Professor of Ophthalmology, University of California. "The Pigment Epithelium and Bruch's Membranes: Their Role in Macular Disease."

1971 *Harold F. Falls, M.D.,* Ann Arbor, Michigan. Professor of Ophthalmology, University of Michigan. "Retinitis Pigmentosa: A Wastebasket Diagnosis."

1972 *Irving H. Leopold, M.D.,* New York, New York. Professor and Chairman, Department of Ophthalmology, Mt. Sinai School of Medicine. "The Therapeutic Tumult and the Ophthalmologists."

1973 *Marshall M. Parks, M.D.,* Washington, D.C. Professor of Ophthalmology, George Washington University. "The Overacting Inferior Oblique Muscle."

1974 *Harold G. Scheie, M.D.,* Philadelphia, Pennsylvania. Professor and Chairman, Department of Ophthalmology, University of Pennsylvania. "Glaucoma 1874 to 1974."

1975 *Frederick C. Blodi, M.D.,* Iowa City, Iowa. Professor of Ophthalmology, University of Iowa. "Some Aspects of Choroidal Melanomas."

1976 *Edward W. D. Norton, M.D,* Miami, Florida. Professor and Chairman, Department of Ophthalmology, Miami University. "Clinical Evaluation of the Patient Presenting With Visual Loss."

1977 *P. Robb McDonald, M.D.,* Philadelphia, Pennsylvania. Professor of Ophthalmology, University of Pennsylvania. "Evolution of Cataract Surgery Since the de Schweinitz Era."

1978 *Joseph A. C. Wadsworth, M.D.,* Durham, North Carolina. Professor and Chairman, Department of Ophthalmology, Duke University. "Orbital Tumors: Their Diagnosis and Treatment."

1979 *Thomas P. Kearns, M.D.,* Rochester, Minnesota. Professor of Ophthalmology, Mayo Clinic. "Venous Stasis Retinopathy and the Carotid Artery."

1980 *William C. Spencer, M.D.,* San Francisco, California. Professor of Ophthalmology, University of California. "Clinical Manifestations of Interferences With Axoplasmic Transport."

1981 *Bradley Straatsma, M.D.,* Los Angeles, California. Ophthalmologist-in-Chief, California Medical Center. "Pigment Epithelium Defects of the Peripheral Fundus."

1982 *J. Donald Gass, M.D.,* Miami, Florida. Professor of Ophthalmology, Bascom Palmer Eye Institute. "Further Observations Concerning the Natural Course and Treatment of Choroidal Melanomas."

1983 *Crowell Beard, M.D.,* San Francisco, California. Emeritus Clinical Professor, University of California. "Müller's Superior Tarsal Muscle: Anatomy, Physiology and Clinical Significance."

1984 *Richard Troutman, M.D.,* New York, New York. Chairman, Department of Ophthalmology, Manhattan EENT Hospital. "The Surgical Microscope in the Management of Cataracts and Keratoplasty."

1985 *Richard A. Thoft, M.D.,* Pittsburgh, Pennsylvania. Professor and Chairman, Department of Ophthalmology, University of Pittsburgh. "The Biology of Ocular Surfaces."

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ACKNOWLEDGMENTS

The author would like to thank Dr. William Frayer, professor of ophthalmology at the University of Pennsylvania, for his contribution of the account of the founding of the Section on Ophthalmology and Drs. William Annesley, William Tasman, Alan Laties, Myron Yanoff and Guy Chan for their stimulating help. Dr. Fred Rogers, professor of medicine at Temple University, and Dr. John McClenahan provided valuable editorial assistance. Last but not least, I would like to thank Mrs. Nongpoth Sternstein, who worked faithfully as a research assistant and secretary.

REVIEW

GREENFIELD, LAZAR J. *Complications in Surgery and Trauma.* 945 pp., illus. Philadelphia: J. B. Lippincott, 1983. Price $75.00.

Reviewed by ALEXANDER C. HERING

On a preliminary scan of this book one is promptly aware that the muse of innovation has worked some magic on the author. He and 66 other contributors have provided italicized overviews at the beginning of each chapter that include issues and advances pertinent to the particular subject. Of course, the idea of the book itself represents an innovation. A third departure is the final chapter, a useful synopsis of surgical complications in chart form offered in two parts: A. Commonly performed operative procedures and their attendant complications (listed alphabetically by involved organ systems); B. Complications for each disease process treated by a given operation (listed alphabetically).

As stated in the author's preface, this is not intended as a textbook of surgery, since it is assumed that the reader will have a basic knowledge of the discipline of surgery. Although meant for the surgical resident and the practicing surgeon, this is nonetheless a book by and for scholars and should-be scholars. Any notion that surgery is not a cognitive branch of medical endeavor could be readily dispelled by reading in this book.

In addition to the details of surgical principles and techniques, emphasis is placed on cooperation among specialists, such as the team approach to serious injury or surgical complications, the necessity for careful audits of procedures and outcomes, and attention to patient safety and rehabilitation.

The author explains that complications do occur, even in the best of hands — just as nature may heal when the hands are bad. Genetic and immune variations in *homo sapiens* make absolute guarantees of surgical outcomes untenable. (This could be a message for *all* the citizenry.)

A chapter on psychological complications of surgery seems well done, although the concentration is on patients' responses to routine surgery, with little discussion of physical trauma or the effects of severe trauma on the victim's family. However, the mere presence of this chapter seems to be a "plus."

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It was difficult to unearth any really negative features in this excellent book; suffice it to observe that the sections on cardiac and pediatric trauma might have been expanded somewhat.

A more positive feature is the chapter on Complications of Multisystem Trauma Management, which I believe represents a good exposition of traumatology as a discipline.

The complications of surgery are relatively delayed and some are remote; the complications of serious injury are immediate, as well as delayed, and also remote. One gets an occasional impression in this book that surgery and its complications are the *cause célèbre*, and that the surgical treatment of the complications of trauma is, after all, no different from that of surgery in general. This might raise a hackle or two among some trauma surgeons, and it very likely is not what the author intended. In any event, what is presented here is the experience of worthy contributors who have given a splendid cross section of what is going on in the real world of surgery, trauma surgery and the complications thereof, which could constitute a significant, practical enlightenment for the surgical reader.

In my view, therefore, this is an extremely well-written and conceived volume, beautifully illustrated, extensively referenced and exceptional in the crafting of the format and the quality of the writing. Having said that, I believe it follows that there should be ample distribution of the work in personal and institutional libraries.

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P. Robb McDonald
1909–1985

WILLIAM TASMAN

P. Robb McDonald, a pioneer retinal surgeon, died on August 13, 1985, at the age of 76. He is survived by three sons, Philip, Richard and David; a daughter, Barbara; and six grandchildren. Born in China of Presbyterian medical missionary parents, Dr. McDonald became fluent in Chinese early in his life before moving to Montreal, Canada.

He was educated at McGill University, receiving his A.B. and M.D. degrees from that institution before beginning a residency in ophthalmology. After one year, Dr. McDonald came to Philadelphia, where he completed a two-year residency at the Wills Eye Hospital. This was followed by a Markle fellowship at the University of Pennsylvania under Nobel Laureate Haldan Keffer Hartline. The two studied the limulus crab with particular attention to dark adaptation.

During the Second World War, Dr. McDonald served in the United States Army Corps and applied much of what he had learned about dark adaptation to helping pilots assigned to night missions.

After the war he returned to Philadelphia where he became Chief of Service at Lankenau Hospital in 1946, serving in that capacity until 1974. He had been appointed an attending surgeon at Wills Eye Hospital in 1948. During this time he was closely associated with Dr. James Shipman, who kindled his interest in retinal detachment surgery, a love that would flourish for the rest of his life and one that led to the formation of the Retina Service (the first vertical service at Wills Eye Hospital) and such innovations as the use of silicone rubber in retinal detachment surgery. Dr. McDonald served as chief of the Wills Retina Service from 1960 to 1971. In 1973, the electrophysiology unit was named in his honor.

Dr. McDonald received many accolades, including the honor award of the American Academy of Ophthalmology and the Man of the Year award from the Ophthalmic Club of Philadelphia. He was a founding member of the Retina Society and became its second president. He held the rank of Professor of Ophthalmology in the Graduate School of Medicine of the University of Pennsylvania and later was named Professor of Ophthalmology at Jefferson Medical College as well.

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In addition to these notable accomplishments, Dr. McDonald projected an aura of confidence. In his home was a photograph of his parents, one that conveyed an impression of strength of character, that he had without doubt inherited.

In our era of changing rules of medical practice and government legislation that have altered the practice of ophthalmology, Dr. McDonald still remains a role model for all of us to emulate. His personal credo for being a good physician was to be honest with patients, to be kind to patients, and to be competent. The last of these traits would usually follow if the first two were practiced faithfully. It was this direct and honest approach that helped make Dr. McDonald not only a successful practitioner but also the ophthalmologist's ophthalmologist. His ability to handle the complicated cases of others and, in so doing, to set things right earned him a large measure of gratitude from those of us who learned from him, worked with him, and had the privilege of being his friend. He will be missed.

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Robert Edwin Jones
1930–1985

FRANK A. ELLIOTT

Robert Edwin Jones, 54, died on September 12, 1985, after a long illness. At the time of his death he was professor of psychiatry at Jefferson Medical College. Long active in American psychiatry, he served as president of the Philadelphia Psychiatric Society and of the Pennsylvania Psychiatric Society, where he chaired numerous committees. In the American Psychiatric Society he held the post of chairman of the history, library and museum committees, and he wrote several papers relating to the history of his specialty.

Robert Jones was a graduate of Williams College, the class of 1952, and of the Medical School of the University of Pennsylvania in 1957. He studied for a year at St. Bartholomew's Hospital in London and often expressed delight in working at an institution that had served as a hospital on the same site for over 900 years. Subsequently, he served for two years in the Medical Corps of the United States Navy and then began his training in psychiatry at the Institute of the Pennsylvania Hospital. He continued there as a member of the staff for 17 years. As clinical director, he was active in developing special programs for adolescents and young adults.

He was editor of the *Transactions & Studies of the College of Physicians* for 11 years and at one time chaired the Section on Medical History, serving as well on several other committees.

From earliest childhood it was his ambition to be a doctor, but his interests also ranged far beyond medicine into literature, music, architecture, medical history, and social issues. His interest was never passive; he always took the lead if he perceived a social need. Thus, with Dr. Daniel Blain, he organized the Benjamin Rush Committee, which, though it failed in its first objective — to preserve the great doctor's house from the wreckers — did lead to the creation of a 276-acre commemorative park on the grounds of the Philadelphia State Hospital at Byberry. His artistic interests led him to the presidency of the Philadelphia Art Alliance, to the Board of Directors of the Afro-American Museum, and to the Board of Directors of the Pennsylvania Mental Health Association.

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Always a humanitarian, Bob Jones joined the Society of Friends as a young man. Later, in the same spirit, he gave the last two years of his life to the care of street people, not only as president of the Philadelphia Committee for the Homeless, but also in a direct, personal way, as physician and comforter. It was he who led the campaign to secure a building at 802 North Broad Street to provide shelter, food and clothes, together with assistance in finding employment for those capable of working.

He is survived by his brothers, Walter John III and Richard B., and a sister, Margaret J. Lord.

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Katharine R. Sturgis, M.D.
Francis C. Wood, M.D.

Council of the College

Mark W. Allam, V.M.D.
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Mrs. C. William Hanson
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John P. Hubbard, M.D.
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John L. McClenahan, M.D.
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John R. Park (Advisor)
Robert S. Pressman, M.D.
Jonathan E. Rhoads, M.D.
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George P. Rosemond, M.D.
Raymond Q. Seyler, M.D.
Stuart Shapiro, M.D.
Daniel L. Shaw, Jr., M.D.
George L. Spaeth, M.D.
Edward J. Stemmler, M.D.
Paul D. Stolley, M.D.
Katharine R. Sturgis, M.D.
Alton I. Sutnick, M.D.
Francis J. Sweeney, Jr., M.D.
Henry J. Tumen, M.D.
Joseph A. Wagner, M.D.
Stewart G. Wolf, Jr., M.D.
Francis C. Wood, M.D.

Meeting Schedule: Fourth Tuesday, 4:00 P.M.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 1 (1986); 53-72.
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Board of Advisors

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Darwin W. Ferguson
Edwin J. Foltz
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Harry G. Kuch
George P. Rosemond, M.D.

William F. Chaveas (Ex-Officio)

Meeting Schedule: Third Tuesday, Odd Months, 4:00 P.M.

Audit Committee

Henry J. Tumen, *Chairman*

John D'Aprix
George P. Rosemond, M.D.

Meeting Schedule: At Call of Chairman

Committee on Budget and Finance

Daniel L. Shaw, Jr., M.D., *Chairman*

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Peter A. Theodos, M.D.
Roderick Tondreau, M.D.
Henry J. Tumen, M.D.
J. Edwin Wood III, M.D.

Meeting Schedule: Third Wednesday, 1:00 P.M.

Committee on By-Laws and Ordinances

Palmer H. Futcher, M.D., *Chairman*

Frank P. Brooks, M.D.
Edward S. Cooper, M.D.
Robert J. Gill, M.D.
Karl F. Rugart, M.D.

Meeting Schedule: At Call of Chairman

Committee on Continuing Education

Edward J. Stemmler, M.D., *Chairman*

Barbara J. Andrew, Ph.D.
John R. Beljan, M.D.
Frederic D. Berg, M.D.
Theodore J. Berry, M.D.
Gerald H. Escovitz, M.D.
Albert J. Finestone, M.D.
Paul J. Fink, M.D.
June F. Klinghoffer, M.D.
Wallace G. McCune, M.D.
Paul M. Roediger, M.D.
Edward C. Rosenow, Jr., M.D.
Patrick B. Storey, M.D.
Victor C. Vaughn III, M.D.

Meeting Schedule: At Call of Chairman

Hall and Grounds Committee

Norman Makous, M.D., *Chairman*

John T. Deininger, M.D.
Peter J. Devine, M.D.
Darwin W. Ferguson, M.D.
William G. Figueroa, M.D.
Sidney O. Krasnoff, M.D.
Marc Lapyowker, M.D.
Steven J. Peitzman, M.D.
Robert E. Weibel, M.D.
Charles C. Wolferth, Jr., M.D.

Meeting Schedule: Third Friday, Odd Months, 1:00 P.M.

Report of the Hall and Grounds Committee

The Hall and Grounds Committee meets in order to monitor budget and maintenance schedules, to review plans for renovation and repair, and to discuss new projects. Several renovations are currently under way. The Mütter Museum is undergoing extensive renovation, changes have been made in Medical Documentation Service to use its space more efficiently and a new luncheon area for nonsmokers on the third floor is under discussion.

Over the past decade the College's need for space has grown to what is now a critical point. Its building, unfortunately, was not designed to accommodate the numerous activities now under way, nor do its lofty ceilings and spacious halls provide economies of space that current needs require.

Initially the need for space was met by modifications included in the extensive restorations of the Third Century Program. But these solutions are by now nearly exhausted; and if all our activities are to remain in our building, the need for space will be determined primarily by competitive priorities. Alternative possibilities include a new building, additions to our present quarters or the use of nearby facilities. These are costly and are not necessarily efficient.

Questions of space use have provided the major agenda items for recent meetings of the Hall and Grounds Committee. The main problem has been the Fellows' Room. In 1977 a private area was laid out for the exclusive use of the Fellows, but unfortunately it has not been used very much. At the same time, the College has proved increasingly attractive for professional and private meetings, dinners and receptions. As a result, the services of a full-time College Function Director were engaged three years ago, with such success that very soon the executive office could no longer contain the director and staff. So a portion of the Fellows' Room was set aside for College Functions staff, and now even this is insufficient.

These activities cannot be curtailed, providing as they do appreciable income. The Functions Coordinator must be situated near the entrance to the building, where there already is limited space. After careful consideration by the Hall and Grounds Committee and Council it was decided to move the Fellows' Room from its present location to the adjacent Hutchinson Room better to accommodate the office of College Functions.

Here, it is true, there is a certain lack of privacy since the Hutchinson Room freely communicates with the foyer, but it is hoped that privacy can be increased by installing a portable Oriental-type screen —a suggestion that Council has approved.

Norman Makous, M.D.

Library Committee
Peter Koblenzer, M.D., *Chairman*

Robert Austrian, M.D.
Herman Beerman, M.D.
Patricia Borns, M.D.
Solomon S. Brav, M.D.
Maurice L. Clancy (Advisor)
Joseph T. Freeman, M.D.
Palmer H. Futcher, M.D.
Howard L. Kent, M.D.
Philip B. Kimbel, M.D.
John J. B. Light, M.D.
Irwin J. Pincus, M.D.
Samuel X. Radbill, M.D.
Robert D. Reinecke, M.D.
Mrs. Brooke Roberts
George P. Rosemond, M.D.
Alvin M. Soffe, M.D.
Earle H. Spaulding, Ph.D.
Stewart G. Wolf, Jr., M.D.
Mrs. F. Douglas Raymond, Jr.

Meeting Schedule: Fourth Thursday, 4:00 P.M.

Report of the Library Committee

The library and its activities continue to be the very core of our institution, and its continued vigor and remarkable strides in the van of medical library development must make us feel very optimistic about the future of our institution as a whole.

We continue to play a leadership role in our area. In the wake of the successful implementation of telefacsimile linkages, the Health Sciences Libraries Consortium, again at the behest of our Director of Libraries, is initiating a study into further development of interlibrary cooperation.

The Glenmede Trust will be the funding source for a planning grant for this project, which will be administered by the College, will take about a year, and will hopefully result in ever greater cooperation between the several great biomedical libraries in this part of the Mid-Atlantic area.

In the library itself important changes have taken place, many of them linked to progressive automation wherever this is practical.

A major project was the stack shift. Close to 100,000 bound journals were shifted by a specialist contractor in the space of two and a half weeks with no disruption of the normal library activities. We now have two years of growth space with continuous shelving. New stack space or distant storage will have to be available after that date, and discontinuous shelving will be adopted thereafter to obviate the need for a further expensive stack shift.

The Consumer Health Information Network (CHINET) came to an end in September 1985 with all its objectives completed. During its

two years of operation about 200 librarians were trained to provide basic biomedical information for the laity and a database of lay-oriented health information material was created. The State Library is very much impressed with our success and is considering expansion of this type of project throughout the state. The Medical Documentation Service continues to expand as its work increases. Great efforts are being made toward increased automation. Expansion is limited only by lack of space and the scarcity of trained personnel.

The Historical Collection has a new head, Tom Horrocks. Tom has written a descriptive brochure and is in the throes of reviving *Fugitive Leaves,* unpublished now for almost thirty years. We have great hopes of getting a grant to catalog the Flick collection of tuberculosis pamphlets, a pilot project on which to base a grant application for badly needed cataloging of now inaccessible material.

Financially, your library continues to be unique in its ability to generate its own funds. Such is our fame that Tony Aguirre, our Director, was asked by the University of Minnesota Libraries to undertake a consultation trip to explain our methods. We continue to generate about 85 percent of our direct expenses from income. If it were not for unremunerative sections such as the historical library and reading room services, we could soon be entirely self supporting!

We are embarking on a restructuring of the library committee. The full committee will meet only on alternate months, and we have subdivided ourselves into several task forces, each devoted to a specific aspect of the library so that committee members will become more fully acquainted with the workings of the library. We hope that through fuller understanding we can more fully contribute to its continuing strength.

In summary, we continue to be one of the great medical libraries in the world. Under the leadership of our young and energetic Director this generation of Fellows will see the library and the College safely into the 21st century.

Peter J. Koblenzer, M.D.

Committee for the Francis Clark Wood Institute

Stewart G. Wolf, Jr., M.D., *Chairman*

Robert Austrian, M.D.
Harold D. Barnshaw, M.D.
Doris G. Bartuska, M.D.
Whitfield J. Bell, Jr., Ph.D.
Lewis L. Coriell, M.D.
Richard W. Foster
Palmer H. Futcher, M.D.
John P. Hubbard, M.D.
Steven J. Peitzman, M.D.
Samuel X. Radbill, M.D.
Jonathan E. Rhoads, M.D.
Fred B. Rogers, M.D.
Charles E. Rosenberg, Ph.D.
Vaughn P. Simmons, M.D.
Stephen H. Sinclair, M.D.
Rosemary Stevens, Ph.D.
Frederick B. Wagner, Jr., M.D.
Mrs. Charles C. Wolferth, Jr.,
Francis C. Wood, M.D.

Meeting Schedule: Fourth Tuesday, Odd Months, 10:30 A.M.

Wood Institute Seminar Series

September 18, 1985
Maternal and Child Health Policy in France and the United States
Alisa Klaus
University of Pennsylvania

September 25, 1985
The Emergence of A Modern Disease: From Anorexia Mirabilis to Anorexia Nervosa
Joan Brumberg
Cornell University

October 2, 1985
The Insanity Defense
Janet Tighe
Temple University

October 9, 1985
***SPECIAL MEETING
HISTORICAL SOCIETY OF PENNSYLVANIA
The Hospital with a Heart: A 19th Century Women's Hospital
Virginia Drachman
Tufts University

October 16, 1985
***SPECIAL MEETING
THOMAS JEFFERSON UNIVERSITY
Eakins' Agnew Clinic: Medicine in Transition
Diana Long Hall
Wood Institute

HISTORICAL SOCIETY OF PENNSYLVANIA
The Healing Art: The Practice of Medicine 100 Years Ago
Charles Rosenberg
University of Pennsylvania

October 20, 1985
Gert Brieger
Welch Institute

October 23, 1985
The History of the Buffalo Asylum
George Dowdell
St. Joseph's University

October 30, 1985
Radium Girls: The New Jersey Dial Painters
Claudia Clark
Rutgers University

November 6, 1985
Patienthood
Sheila Rothman
Center for the Study of Society and Medicine

November 13, 1985
The History of the College of Physicians of Philadelphia
Whitfield Bell
American Philosophical Society

December 3, 1985
German Physiology
Eva Artschwager
University of Pennsylvania

December 10, 1985
BCG Vaccine
Gina Feldberg
Harvard University

The Second Wood Institute Conference
One Hundred Years of Internal Medicine
PROGRAM

March 21, 1986
Keynote Address: *Internal Medicine Within and Without*
Rosemary Stevens, Ph.D. (University of Pennsylvania)
Paul Beeson, M.D. (University of Washington)

The Literature of Internal Medicine
Bruce Fye, M.D. (Marshfield Clinic, Wisconsin)
Comment: Edward Huth, M.D. (*Annals of Internal Medicine*)

Evolution of the Subspecialties

Gastroenterology: Joseph Kirsner, M.D. (University of Chicago)
Comment: Lindsay Gransaw, Ph.D. (Wellcome Institute, London)
Rheumatology: Thomas Benedek, M.D. (University of Pittsburgh)

Major Themes in Internal Medicine

Clinical Investigation: Harry Marks, M.A. (Harvard)
Nosology and Changing Disease Concepts: Steven Kunitz, M.D., Ph.D. (University of Rochester)
Comment: Charles Rosenberg, Ph.D. (University of Pennsylvania)

March 22, 1986
Evolution of the Subspecialties

Endocrinology: Diana Hall, Ph.D. (Wood Institute)
Comment: James Pittman, M.D. (University of Alabama)
Cardiology: Joel Howell, M.D. (University of Michigan)
Comment: Chris Lawrence, M.D. (Wellcome Institute, London)

Institutions

The American Board of Internal Medicine
Palmer Futcher, M.D. (University of Pennsylvania)
The Association of American Physicians
A. McG. Harvey, M.D. (Johns Hopkins University)
The American College of Physicians
Edward Rosenow, M.D.

Evolution of the Subspecialties

Infectious Diseases: Edward Kass, M.D., Ph.D. (Harvard)
Comment: Saul Benison, Ph.D. (University of Cincinnati)
Nephrology: Steven Peitzman, M.D. (Medical College of Pennsylvania)
Comment: Samuel Thier, M.D. (Yale University)

Final Summation: Donald Fleming, Ph.D. (Harvard)

Committee on the Mütter Museum and College Collections

Robert H. Bradley, Jr., M.D., *Chairman*

Henry Abrams, M.D.
Mrs. Herman Beerman
Bernard Behrend, M.D.
Warner D. Bundens, M.D.
Robert T. Boyd III, M.D.
Lewis L. Coriell, M.D.
C. Nelson Davis, M.D.
Henry Drinker, M.D.
Horatio T. Enterline, M.D.
Edwin J. Foltz (Advisor)
Walter P. Lomax, M.D.
Mrs. Frank T. Mansure
Alma Dea Morani, M.D.
Leslie Nicholas, M.D.
Charles M. Norris, M.D.
Perry Ottenberg, M.D.
Lawrence C. Parish, M.D.
Mrs. Robert S. Pressman
Thomas K. Rathmell, M.D.
Howard H. Steel, M.D.

Meeting Schedule: Second Wednesday, 4:00 P.M.

Committee on Planning and Development

Lewis L. Coriell, M.D., *Chairman*

George I. Blumstein, M.D.
Lewis W. Bluemle, Jr., M.D.
Herbert A. Faust, M.D.
John H. Hodges, M.D.
Arthur C. Kaufmann (Advisor)
Brooke Roberts, M.D.
Jonathan E. Rhoads, M.D.
George P. Rosemond, M.D.
Daniel L. Shaw, Jr., M.D.
George L. Spaeth, M.D.

Meeting Schedule: First Tuesday, 4:00 P.M.

Rare Books Sub-Committee

Irwin J. Pincus, M.D., *Chairman*

Joseph T. Freeman, M.D.
Samuel X. Radbill, M.D.
Peter Koblenzer, M.D. (Ex-Officio)

Meeting Schedule: At Call of Chairman

Committee on Publications (Editorial Committee)

Robert Austrian, M.D., *Chairman*

Whitfield J. Bell, Jr., Ph.D.
George R. Fisher, M.D.
John L. McClenahan, M.D.
Jonathan E. Rhoads, M.D.
Fred B. Rogers, M.D.
Charles E. Rosenberg, M.D.

Meeting Schedule: At Call of Chairman

Committee on Fellowship

Joseph A. Wagner, M.D., *Chairman*

Herman Beerman, M.D.
Adolph H. Bleier, M.D.
Robert V. Cohen, M.D.
William H. Dickerson, D.O.
William I. Heine, M.D.
Horace MacVaugh III, M.D.
Karl R. Meyers, M.D.
Timothy J. Michaels, M.D.
Edward J. Resnick, M.D.
Brooke Roberts, M.D.
George P. Rosemond, M.D.
Linwood F. Tice, D.Sc.
Robert C. Wolfe, M.D.
Margaret G. Wood, M.D.

Meeting Schedule: Second Tuesday, 3:30 P.M.

Committee on Public Health and Preventive Medicine
Paul D. Stolley, M.D., *Chairman*

C. Nelson Davis, M.D.
Georgina Faludi, M.D.
Ira W. Gabrielson, M.D.
Richard A. Lippin, M.D.
Walter P. Lomax, M.D.
Samuel P. Martin III, M.D.
Thomas K. McElhinney, Ph.D.
Lewis W. Polk, M.D.
Raymond Q. Seyler, M.D.
Stuart Shapiro, M.D.
Robert Sharrar, M.D.
John Sorenson, Th.M.
Rosemary Stevens, M.D.

Meeting Schedule: Third Tuesday, Even Months, 3:30 P.M.

Report of the Committee on Public Health and Preventive Medicine

During the year 1984–85, the Public Health and Preventive Medicine Committee of The College of Physicians took on, as a major effort, a study of homicide as a public health problem in Philadelphia. In our city homicide is the leading cause of death of young black males and is one of the ten leading causes of death in the city. In October we held a conference in which a small admission fee was charged to make it self-supporting. Among the speakers were some from the Delaware Valley and discussion centered on the importance of homicide, its causes and the role of organized medicine in its prevention.

Additional work of the Committee concerns the problems of alcohol and cigarette abuse and the burden of illness generated by these two addictions. After some deliberation, the Council of the College of Physicians was not willing to accept our Committee's recommendation that legislation designed to provide smoke-free areas in the work place be endorsed. However, the Council was interested in warnings about alcohol abuse while driving, which might be distributed in packages purchased at state liquor stores, and in a different approach to the problem of cigarette smoking.

In summary, the Public Health and Preventive Medicine Committee has made some progress in defining its program and will focus on cigarette and alcohol addiction and the problem of homicide. We have been limited by a lack of funds but believe we have found a way to get around that next year and hope that a conference or symposium on the problem of homicide will generate some excitement and interest in this understudied area.

Paul D. Stolley, M.D.

Program of the Committee on Public Health and Preventive Medicine

October 3, 1985

10:00 A.M.	Welcome: Dr. Stuart Shapiro, Philadelphia Health Commissioner
10:10 A.M.	*The Epidemiology of Homicide* Dr. James Mercy National Center for Disease Control, Violence Epidemiology Branch
10:45 A.M.	*The Causes of Homicide* Dr. Margaret Zahn, Professor of Sociology, Temple University
11:30 A.M.	Coffee Break
11:50 A.M.	*The Legal Questions of Gun Control* Frank Goodman, Esq., Professor of Law, University of Pennsylvania Law School
12:10 P.M.	*Homicide and Mental Illness* Robert Sadoff, M.D., Professor of Forensic Medicine, University of Pennsylvania School of Medicine
1:00 P.M.	Lunch
1:45 P.M.	Workshops: A. Causes of Homicide B. Prevention of Homicide C. Handguns in America
3:00 P.M.	Reports of Workshops
4:00 P.M.	Moderator's Summary

Committee on Scientific Affairs

George L. Spaeth, M.D., *Chairman*

Doris G. Bartuska, M.D.
Baruch S. Blumberg, M.D.
Mary S. Fisher, M.D.
Joseph S. Gonnella, M.D.
C. William Hanson, Jr., M.D.
Wallace G. McCune, M.D.
William N. Mebane III, M.D.
Mrs. F. Douglas Raymond, Jr.
Edward J. Stemmler, M.D.

Meeting Schedule: At Call of Chairman

Scientific Affairs Programs, 1985
(College Nights)

January 9, 1985
The Thomas Dent Mütter Lecture
Changing Patterns of Disease
Bennett Lorber, M.D.

February 6
Joint Meeting with the Philadelphia Orthopedic Society
New Concepts in the Etiology of Osteoporosis
Sol Epstein, M.D.

March 6
The Kenneth Appel Memorial Lecture
Joint sponsorship with the Department of Psychiatry,
University of Pennsylvania School of Medicine
The Brain Thyroid Axis and Behavior
Peter Whybrow, M.B., B.S.

April 3
The Hira S. Chouke Lecture
Cataract Management 1985: Facts and Myths
Stephen B. Lichtenstein, M.D.

May 1
The Nathan Lewis Hatfield Lecture
Retrovirus Causes of Adult T-Cell Leukemia and AIDS: A Personal Account
Robert T. Gallo, M.D.

October 2
The James M. Anders Lecture
Choosing Students: Making Doctors
James E. Eckenhoff, M.D.

November 6
The Robert Abbe Lecture
Oncogenes of Retroviruses and Human Cancer Cells
Stuart A. Aaronson, M.D.

December 4
A Tribute to Pioneers in Pediatric Surgery
Cardiac Surgery in the Very Young
John W. Kirklin, M.D.

Women's Committee

Mrs. Robert S. Pressman, *Chairwoman*

Mrs. Robert Booth, Vice Chairwoman
Mrs. Wallace McCune, Recording Secretary
Mrs. John Webber, Treasurer
Mrs. John McClenahan, Corresponding Secretary

Meeting Schedule: First Tuesday, 10:00 A.M.

Report of the Women's Committee

The Women's Committee is the volunteer arm of the College and was formed to help in the restoration and maintenance of the magnificent building that houses the College. The newly decorated Thomson, Cadwalader and Mitchell Halls are used for social and official functions by many groups and individuals. Mitchell Hall was the site of a recent TV taping and will soon be shown on national television.

The fund-raising endeavors of the Women's Committee, though modest, are always interesting, entertaining and frequently educational. Cooking demonstrations, trips, lectures and the annual Book Sale are among the many activities offered.

There is an active guide program in the Mütter Museum, and we hope to have some volunteers working in the library as well. The Decorating Committee oversees the refurnishing of the public and private rooms. All these committees need people who are interested and willing to contribute their own particular expertise.

This year we have made a determined effort to increase our membership. There are now 140 members on the committee, and we are anticipating many more. Membership is open to any friends who are interested in furthering our aims, and we would welcome all inquiries.

Reba S. Pressman

Free Lectures to the Public
Medicine and Society: Medical Dilemmas and Consumer Choices

October 1, 1985
The Patient's Role in Decision Making
Edward H. McGehee, M.D.

October 15, 1985
Rationing Health Care; Tragic Choices
Bernard S. Bloom, Ph.D.

October 29, 1985
Dying With Dignity; Where And How?
Priscilla D. Kissick, R.N., M.N.

November 12, 1985
Physicians—Requirements For The Future
Alton I. Sutnick, M.D.

Sections of the College of Physicians of Philadelphia

Section on Dermatology

Caroline S. Koblenzer, M.D., Chairman

Program

September 23, 1985
November 13, 1985
January 15, 1986
Cutaneous Signs of Malignancy
Donald Lookingbill, M.D.
April 9, 1986
To be announced

Old Blockley Section

C. Nelson Davis, M.D., Chairman — Miriam B. Dahlke, M.D., Scribe

Section on Ophthalmology

Myron Yanoff, M.D., Chairman — Guy H. Chan, M.D., Clerk
Annual Report of the Section — May 13, 1985

Report of the Section on Ophthalmology.

de Schweinitz Lecture

The forty-seventh de Schweinitz Lecture and Dinner were held at the College of Physicians of Philadelphia on Monday, November 26, 1984. Dr. Richard Troutman was the guest speaker. One hundred and thirty guests attended the dinner.

The lecture was scheduled at 5:30 P.M., followed by cocktails and dinner at 6:30 P.M.

Three speakers were chosen at the last Executive Committee meeting on May 14, 1984. They were:

Richard O'Connor, M.D., of the Francis I. Proctor Foundation
Arnall Patz, M.D., of the Wilmer Ophthalmological Institute
Robert Machemer, M.D., of Duke University

Dr. O'Connor declined the invitation because of ill health. Dr. Patz accepted the invitation to speak in 1986. To replace Dr. O'Connor, Dr. Machemer was invited, but he was unable to accept the invitation because of conflict of schedules. Dr. Richard Thoft, Chairman of Ophthalmology at the University of Pittsburgh, accepted the invitation to be the forty-eighth de Schweinitz lecturer for 1985.

Membership

This year, the number of active members of the Section on Ophthalmology dropped from 96 to 91 because of two deaths and three resignations. Deceased are Dr. Glen Gibson and Dr. Michael Wolkowicz. Resigned from membership are Dr. Gerald Horan, Dr. Patrick Kennedy and Dr. Frederick Sutliff.

There are eight members who have not paid their dues for two consecutive years. According to the rule of the Section, they will be automatically dropped from the list.

During the last meeting, we discussed the plan to recruit more members to the Section.

Dr. Harold Barnshaw has been working on a biography of Dr. de Schweinitz. The plan is to have it published by the College of Physicians for public relations purposes. The costs for publication, however, will have to be covered by the Section.

Guy H. Chan, M.D.
Clerk

Section on Medical History

Allen C. Wooden, M.D., Chairman — A. Michael Broennle, M.D., Clerk

Program

September 18, 1985

Dr. John A. Brown, Wilmington Physician, Political Activist, and Humanitarian
Everett D. Bryant, M.D., Dover, Del.
Walter M. Bruner, Ph.D., DuPont Co.
Pierre Le Roy, M.D., Neurosurgeon, Wilmington, Del.

October 16

History of the Use of Agent Orange and Its Medical Effects
John M. Levinson, M.D., Wilmington, Del. Medical Missionary

The U.S. Hygienic Laboratory and the Beginnings of Medical Laboratory Research in the United States
Rumunas Kondratas, Ph.D., Curator, Medical Sciences Division, National Museum of American History

November 20

Naval Medicine in the Age of Sail
J. Worth Estes, M.D., Professor of Pharmacology,
Boston University School of Medicine

Admiral Horatio Nelson — England's Greatest Naval Hero and His Medical Problems
Michael Cohen, M.D., Chief of the Department of Neurology,
VA Hospital, Philadelphia, Pa.

February 25, 1986

Joint Meeting with Philadelphia Allergy Society, Thomson Hall
History of Allergy in Philadelphia

March 13

The Kate Hurd Mead Lecture
Jointly sponsored by the Medical College of Pennsylvania and the Section on Medical History

Discussion of Portion of Career of Dr. Alice Hamilton
Barbara Sicherman, Ph.D., Trinity College, Hartford, Ct.

Comments After Dinner
Dorothea A. Johnson, M.D.
President, American Occupational Medical Association

April 16

Samuel X. Radbill Lecture
The Well-Placed and Misplaced Philosophies, Benjamin Rush of Philadelphia and Benjamin Waterhouse of Boston
Philip Cash, Ph.D., Professor and Chair, Department of History, Emmanuel College

Section on Otolaryngology

Emil P. Liebman, M.D., Chairman — Ernest McKenna, M.D., Clerk

Program

November 19, 1985

The Evaluation of Flaps and Grafts Used in Head and Neck Reconstruction
Robert A. Weisman, M.D.

Intranasal Dacryocystorhinostomy or West Procedure Revisited
James S. Summerson, M.D.

February 11, 1986
To be announced

April 15, 1986
To be announced

Section on Geriatrics and Gerontology

Joseph T. Freeman, M.D., Chairman — Patrick B. Storey, M.D., Clerk

Program

October 9, 1985

A Forum on Aging: The Brain's Aging and Its Social Consequences

Opening Statement
Dr. Patrick B. Storey, Section Officer

Forum Introduction
Dr. Jonathan E. Rhoads, Program Chair

The Use of CT in Assessing Cerebral Function
Donald E. Red, M.D., Chief, Diagnostic Radiology and Ultrasound, Lankenau Hospital; Associate Professor, Radiology, Thomas Jefferson University Hospital

Nuclear Magnetic Resonance Imaging Past Age 65
Robert A. Zimmerman, M.D., Professor of Radiology, Hospital of the University of Pennsylvania

Positron Emission Tomography of the Brain During Aging
Abass Alavi, M.D., Professor of Radiology and Neurology, Chief, Division of Nuclear Medicine, Hospital of the University of Pennsylvania

The Brain's Aging and Its Social Consequences
Ewald W. Busse, M.D., President of the International Association of Gerontology, Associate Provost and Dean, Medical and Allied Health Education, Duke University

Dr. Joseph T. Freeman, *Section Officer*

Section on Insurance Medicine

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Theodore S. Wilder
Alma L. Young
Matthew Zakreski

RESIGNATIONS: 10

ACADEMIA

Items of Interest from Philadelphia Medical Centers

Hahnemann University. Funding has been received in support of The Krancer Center for Inflammatory Bowel Disease Research. The program, designed for the study of ulcerative colitis and Crohn's disease, will be directed by *Vincent Dinoso, M.D.*

The Medical College of Pennsylvania. A grant of $450,000 has been received from the William Penn Foundation to develop the emergency medical service program, with service to be provided in a Patient Care and Clinical Education Pavilion currently under construction.

A pledge of $100,000 has been received from the SmithKline Beckman Corporation to support construction of the Patient Care and Clinical Education Pavilion.

A new imaging technique, SPEC (single photon emission-computed tomography), under the supervision of *Janet Parker, M.D.,* is to be used in the investigation of epilepsy, altered blood flow to the brain and other neurological problems.

In a program headed by *Alma Dea Morani, M.D.*, medical students are to be given the opportunity to participate in a voluntary art lecture series. In addition to a current program of Bioethics in Clinical Care, required of all first-year students, a Medical Humanities program, codirected by *John Sorenson, Th.M., M.S.W.,* and *Garrett Bergman, M.D.*, is under way.

Richard A. Newman, M.D., has been appointed to the position of director of continuing medical education.

Under the direction of *Richard N. Harner, M.D.*, a new, noninvasive method of "brain mapping" is to be used in the investigation of epilepsy, tumor, stroke and other neurological disorders.

A grant has been received to finance the effect of perinatal birth stresses on a child's brain development and its ability to respond to emotional and physical pressure later in life. The research will be under the supervision of *Leonard L. Ross, Ph.D.*

Thomas Jefferson University. *Allan J. Erslev, M.D.*, has been named Distinguished Professor of Medicine. *Sandor S. Shapiro, M.D.*, has been named his successor as director of the Cardeza Foundation for Hematologic Research.

A newly founded organization, the Philadelphia Friends of the University of Rome and Thomas Jefferson University, will undertake to develop a close academic relationship between the two institutions.

Herbert E. Cohn, M.D., has been

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elected president of the hospital medical staff.

A joint program is under way with the Children's Heart Hospital, directed by *Dr. Paul A. Branca, M.D.*, and *Stephen J. Bachrach, M.D.*, to provide special treatment to infants suffering from bronchopulmonary dysplasia.

Funding has been received for a research program to study the first primate model that accurately simulates human Parkinsonian symptoms. The project will be directed by *Robert J. Schwartzman, M.D.*, and *Guillermo M. Alexander, Ph.D.*

Temple University Health Sciences Center. *George I. Blumstein, M.D.*, has been awarded the Henry Jude Salter Clinical Award from the International Congress of Allergology and Clinical Immunology in recognition of his contribution to the understanding and treatment of allergic disease.

A newly introduced program will study adolescents afflicted with lupus. Included in the Adolescent Rheumatology Program, it will be supervised by *Steven N. Berney, M.D.*, and *Althea Hankins, M.D.*

The Philadelphia Division of the American Cancer Society has selected *Peter N. Magee, M.D.*, as recipient for its Scientific Achievement Award. The award recognizes Dr. Magee's contribution to the understanding of carcinogenic properties of nitrosamines.

To the end of coordinating the management of head and neck cancer, a center has been established to bring together specialists involved with tumors of the upper respiratory and digestive tracts. The director of the center is *Rose Mohr, M.D.*

University of Pennsylvania Health Institute. *Robert L. Goodman, M.D.,* has been elected Acting Executive Director of the Hospital of the University of Pennsylvania and Chairman of its Clinical Practices Executive Committee.

David B. Nash, M.D., has been appointed Deputy Editor of the *Annals of Internal Medicine.*

Students at the School of Medicine spent a week in November bringing food and clothing to homeless people unable or unwilling to leave the streets in winter weather.

A Nobel Prize in Medicine has been won by *Michael S. Brown, M.D.*, a graduate of the Class of 1966 at the School of Medicine.

Edward J. Stemmler, M.D., has been named a Master of the American College of Physicians.

The newly elected president of the American Academy of Neurological Surgeons is *Thomas W. Langfitt, M.D.*

TRANSACTIONS & STUDIES

of

THE COLLEGE OF PHYSICIANS
OF PHILADELPHIA

MEDICINE & HISTORY

Series V Volume VIII Nº 2 June 1986

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THE COLLEGE OF PHYSICIANS
OF PHILADELPHIA

MEDICINE & HISTORY

Series V Volume VIII N° 2 June 1986

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ISSN 0010–1087

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Authors should submit two copies, typed on one side of 8½ x 11 inch paper; all material, including quotations and references, should be double-spaced. A short summary of the paper should also be included. *Transactions & Studies* accepts either footnotes or references, but either must be in accordance with the guidelines in *A Manual of Style* (Chicago: University of Chicago Press, 1969), 12th edition. Prospective authors are encouraged to examine back issues of *Transactions & Studies* to familiarize themselves with the format of the journal.

Photographs and other illustrations may be included. Tables must be typewritten on separate sheets; they should be prepared professionally before submission.

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Transactions & Studies of the College of Physicians of Philadelphia (ISSN 0010 – 1087) is published four times a year (March, June, September, December) by the College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, PA 19103. Second-class postage paid at Philadelphia, PA 19104. POSTMASTER: Send address changes to *Transactions & Studies of the College of Physicians of Philadelphia,* 19 South 22nd Street, Philadelphia, PA 19103.

Subscription correspondence should be sent to Publications Manager, *Transactions & Studies,* The College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, PA 19103. Subscriptions, U.S.A. and Canada $30.00, foreign $34.00. Single copies, $9.00.

Transactions & Studies of the College of Physicians of Philadelphia is indexed in *Biological Abstracts, Chemical Abstracts,* and *Index Medicus.*

TRANSACTIONS & STUDIES
OF THE
COLLEGE OF PHYSICIANS OF PHILADELPHIA

Series V Volume VIII Number 2 June 1986

MEDICINE AND HISTORY

Architectural Concepts in 1909 and Their Influence on the College Building Design
VINCENT G. KLING 75

Health Care in the 1980s: Changes, Consequences and Choices
WILLIAM L. KISSICK 89

Dr. Albert L. Shelton (1875–1922) and the Tibetan Collection in the Newark (New Jersey) Museum
FRED B. ROGERS 101

Dialogue with Animals
AARON H. KATCHER and ALAN M. BECK 105

Public Attitudes Toward the Control of AIDS: The Homosexual's Plight
PERRY OTTENBERG 113

REVIEWS

ERIC J. CASSELL, *The Healer's Art*
Reviewed by Elihu S. Howland 121

JOHN D. STOECKLE and GEORGE A. WHITE, *Plain Pictures of Plain Doctoring*
Reviewed by Louise Rosskam 124

HANNA K. BARSKY, *Guillaume Dupuytren: A Surgeon in His Place and Time*
Reviewed by Francis Schumann 127

JOHN ARCHER and BARBARA LLOYD, *Sex and Gender*
Reviewed by Diana Elizabeth Long 129

MEMOIR

John Valentine Blady (1905–1985)
ROBERT D. HARWICK 131

Addendum 134
Academia 135
Correction 137

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Acknowledgments

The publication of *Transactions & Studies of the College of Physicians of Philadelphia* is made possible through the generosity of:

The M. Louise Carpenter Gloeckner Memorial Fund
The Morris Feld Memorial Fund
The Benjamin and Mary Siddons Measey Foundation

Architectural Concepts in 1909 and Their Influence on the College Building Design

VINCENT G. KLING

I hastened to accept the invitation to conduct an architectural research and review of The College of Physicians headquarters building in Philadelphia because I have long admired this great classical Renaissance jewel. I have had a chance to study it a bit and to look at the drawing done by one of Philadelphia's most famous architectural firms of all time, Cope and Stewardson. Cope was the scientist member of the firm. Stewardson was the artist member of the firm, and in his name we have today a Stewardson Fellowship at the University of Pennsylvania. These were great architects, and whoever chose them must have done a good job of selection because there were many architects coming up in Philadelphia at the turn of the century. Stewardson and Cope came to Philadelphia filled with the inspiration of the Beaux Arts education that all good architects aspired to obtain at that time. The Beaux Arts School of Architectural Design still flourishes in Paris and has probably been the source of inspiration to more than half the architects who are practicing even today. When I started school, the Beaux Arts system was still firmly in place. If you look at some buildings today, you will see vestiges of the ancient forms of the Beaux Arts reappearing on their facades — implanted, of course, but with none of the integrity of this building.

In my research, I found it interesting to see how your forebears looked on architecture, how they picked an architect, what they told the architect to do and how he performed. Great integrity was evident. They said to the architect: "We would like a building in which the exchange of information could take place through meeting rooms, reception centers, a great library and a modest museum." The site selection, part of the original assignment of the architect in conjunction with the building committee, gave rise to great confusion. Nobody wanted to come this far west in Philadelphia to build. They finally picked this site because, among other reasons, it was big enough, being

An address on the occasion of the Seventy-Fifth Anniversary of the College of Physicians Hall on November 7, 1984.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 2 (1986); 75-87.
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roughly about 160 feet × 125 feet, and also because many of the physicians who were practicing in Philadelphia during this period had their houses within walking distance of this area (Pine Street, Locust Street, and so forth). The physicians really preferred this location, and I think it was a good idea. The site still has some room to grow; it still has the lovely garden; and, while you are looking to the east for acquisitions for your future, I still feel that this building might even consider some vertical growth over the stacks. (I will tell you about that a little later.)

This building was way ahead of its time. I can't believe that in 1909 architects were using rolled steel sections in a building. The Carnegie section had come out shortly before that; and yet every single long-span beam in this building is reverse cambered. Mitchell Hall upstairs, which is a very large span for its time (clear span), is a reverse cambered beam structure and that is way, way ahead of its time. Beams with crown side formed and upward (reverse camber) correct the optical illusion of the sag effect of a flat arch. We don't even think about those things today because we have so many other problems; but the aesthetics that were considered in this very formal building were first and foremost. Most people think that architects have a great sense of decorative touch — and I would agree that they are artists long before they are scientists, if they ever are scientists — but architects really deal principally with the conception of space, i.e., its proportions and function. How you adorn it inside and outside is something that the vocabulary of the time brings to the building but that is subordinate to the spatial concept. The great architects of all time have thought first of space — the three-dimensional conception — and that is the best thing about this building. Mitchell Hall I would put up with any other grand hall in Philadelphia as number one. It is a great space, it has great proportions, it has elegant finishes — but, most of all, it has the golden mean proportion in its floor plan and in its wall section. Unfortunately, you don't quite appreciate that today because a grand sky-dome, with stained glass that some of you may remember (I don't, because I had not visited the building in the days when the sky was the light source), has been covered over. I guess it leaked; most buildings do. But in order to stop the leaks of the rain and, I presume, some air, some building committee put a black ceiling over it and took this beautiful piece of stained glass out.

One of the great joys of this building certainly was the concept of

how it was lighted. The grand spaces upstairs—Mitchell Hall and the stairway, and the pyramidical arches that go down the face of the rooftop—have all been covered over. The spirit of the building was obscured! I can't believe that men whose own heart and practice come from the word "Arzt" (the Germans called the doctor "the artist") could yield to today's pressures and standards by covering over the top. It's like pulling your hat down over your eyes and walking down the street. I hope someday you recover this precious top-lighted glory that the building once had; and it had it because artificial light was really not known in those days. Thank goodness! The fluorescent lights that have come into this building since the skylight removal produce a cold, unflattering light. What a shame!

I am fascinated with the idea of the building. The spaces are great. The spans are really tremendous for their time. It is constructed in a deep pit in the ground on a concrete bottom—the first big concrete structure bottom, I think, in this area. The floor arches—all the floor structures—are flat terra-cotta arches; they are strong (they'll be here forever) and they are fireproof! There isn't a piece of structure in the whole building that will burn—and that is remarkable. You have a great building. Let me tell you a little about the architects.

They were invited to make a study for the building that would have a fixed, finite, firm budget that they were never to exceed. They were paid $1,500.00 to design it and price it. They priced it at $335,000.00 (or $4.50 per square foot). Today, the building would be at least $100.00 per square foot and probably more because of the high ceilings. The architects not only met their budget; they beat it. They delivered the building for just about $300,000 (this was in 1909). This is remarkable when you consider that the building is fireproof, that it abounds in structural steel members (way ahead of its time), that it had an internal vacuum system for cleaning the floors, that it had integrally structured book stacks eight stories high (all by themselves structurally sound) and that it had air pumps (these great halls had pressurized air systems in 1909, which I think is pretty terrific). I have looked at some of the old ductwork up in the garret, where this air was moved from air pumps down into the building. The whole system is extraordinary. A pressurized air system was really quite an innovative notion.

While I don't want to take too much time on generalities, I think it is interesting to note some of the specifications that were, for their

day, really advanced; and some of the specifications that were safe, tried and true, "don't try to reinvent the wheel" kind of thing, were amazing. For instance, the mortar that was used on the plaster for the walls was lime that came packaged dry and that was slaked for six weeks. By slaking I mean they put it in great metal containers, soaked it with water for about six weeks before they applied it, and then used clean, long oxen hair to reinforce the mortar. This was one of the first buildings in the city to use metal lathe behind that plaster. The plaster is crack-free and is really in beautiful shape today, after seventy-five years, not only because the structure was stout but because the old tried and true system of slaking the lime, with reinforcement, was used. Today, lime is prepackaged, and you always get little cracks in it and rely on the paint to hide the imperfections. Sometimes the bridging paint we use today doesn't do the job.

Some other concepts I thought remarkable. In the joints in the masonry, specified to be lime butter, there is no cement. This is really reprocessed lime that has been melted in with a little sand and put into the brick joint very thinly so that the major proportion of the wall is the baked product, which is the brick and which lasts forever, and the joint is infinitesimal. They did know then what we are now discovering (through research by our British friends)—that lime putty mortar becomes harder as it ages; as ozone works it, it becomes tougher than the brick itself. They never told me this in school! I never heard about it until a few years ago when I was in London. The joints in this building are lime putty joints, and I don't think you're going to have to repoint this building! Most modern buildings get repointed about every twenty years. I've been all over the building, and I want to tell you some of the architectural detail and concepts these architects brought to you.

I really like the richness of the decorative touches of the limestone. It is combined with brick in the basic body of the external walls of the building (the wall-bearing masonry) *(Fig. 1)*. The foundations are 36 inches thick, the mid-body walls that you see around the door are 24 inches and the top of the building is 18 inches. That's a pretty thick wall! The brickwork is what we call bonded brickwork. This means that every single course of brick in the building is bonded back into the wall with fingers of brick. That's why it is so stable in conjunction with the decorative limestone facings around the windows, the limestone trim around the doors, the belt courses—which go through the

Figure 1. Hall of the College under construction, 1908 (This and all subsequent photographs by courtesy of the Historical Collections, Library of the College of Physicians of Philadelphia.)

midriff of the building — and the cornice on the top, which is a balustrade. Most buildings have cornices that walk off in seventy-five years. I went up and looked at the cornice, and it is just as good today as the day it went in, partly because of the way it was built and integrated into the wall, and partly because there is a certain amount of heat-sink action up into that balustrade from the body of the building. Buildings today have parapets, and the parapets are out in the weather and walk because weather makes them hot and cold. This balustrade has an integral structure with the base body of the building, and it will be there for another seventy-five years.

The gates are elegant work, as is the fencing that embraces the building. This very beautiful wrought-iron work is of such quality that you don't have to paint it every year. The only element I worry about a bit is the pilaster system that holds up this ironwork. I looked at the pictures of this building when it went into the ground; it was nothing but a hole and they were dragging the dirt out from the bottom with

Figure 2. The Grand Staircase, 1910.

carryalls. Many of the areas where the balustrade and the outside fence go down into the ground today were built on disturbed ground — they don't go down into the ground 22 feet the way the main building does. Therefore, they are starting to tilt a little bit, and that's probably the worst maintenance problem you're going to have around this building.

Most impressive to me is the nature of the plan. It is very formal, very symmetrical, right out of the Beaux Arts School, a Christopher Wren adaptation kind of plan. Some feel that it was an English adaptation. The English, of course, used the Renaissance forms just as well as everybody else in Europe at the time. But it came over here with discipline and order and an affinity to the symmetry that you won't see in very many buildings. It pains me a bit, however, to come in that front door and look down the beautiful sweep of hallway to that great

marble staircase and see the space compromised by showcases; to see Aesculapius at the head of the stairs, artificially and blandly lighted when, in fact, that grand stair, which is an elegant piece of sculpture *(Fig. 2)*, had a great sky-dome over it when the building was first constructed. Just above the stairway is a huge plywood covered loft for the purpose of storing your reserve journals, and so forth. I think that someday you ought to open that space up again and make this glorious building come alive with natural daylight. You come in the front door, and that's the architecture that hits your eye. An architect can see that it had the brightest light and the greatest play of shadow and shade because this stairway is more of a sculpture to attract your eye than a utilitarian way of getting upstairs. The large rooms flanking the stair on either side of the hall are symmetrical to it (even the offices out front were disciplined to be symmetrical), and the whole space has great order, great composition, great strength. The back of the building is the workshop. This is where the stacks and the workrooms for the library are located. The stacks are at the rear, multistoried, self-supporting, with workspace at the upper levels. This hall, however, is the main boulevard that brings you into all these handsome rooms and back to the grand stairway. One couldn't fault it architecturally or spatially in any way.

On the second level, the Hall of Portraits (Mitchell Hall) is one of the grandest spaces and best-proportioned halls in Philadelphia *(Fig. 3)*. Lincoln Hall at the Union League can't touch it for proportion and can't begin to touch it for finish and elegance of ceiling treatments. The only hall that comes close is the great Memorial Hall in Fairmount Park.

The Reading Room is a very elegant space, beautifully proportioned. I just can't impress on you how very delightful it is to see a building with this kind of care. It is really far and beyond the call of duty that the architects did it this way, and the building itself, as it resides on this corner, has much to say about the integrity of the people who did it. A little tiny narrow street like this would normally get a blank brick wall. Your architects came along and finished that wall just as elegantly as the front space of the building, with the same amount of care for detail, including Palladian window treatments, which were, in that day, very popular. The stonework, which you must examine carefully someday when you are walking around, includes limestone, which was specified to be field-cured five years before setting. That means it came

Figure 3. Interior of Mitchell Hall, 1910.

to the job cured, fully hardened and ready to go into place without field damage. That's why I think it has stood up so well. The same is true of all the wood that went into the building. Every piece of wood in the building is select, longleaf, yellow pine, shed-dried (no fire under it—and that means air-dried five years before use). When the building was built, every one of the window openings was closed with a temporary closure so that the humidity could be controlled inside the building during construction. The floors and all the woodwork (the wood doors, the wood frames) were protected against the temperature swings as well as the elements. I haven't seen that kind of specification in a document ever! And I think this is probably one reason why the building has stood up so well.

The detailing is very carefully done. The one thing you must admire is the brickwork. This is considered to be the finest art of bricklayers. Every other brick is a "header" brick. The head of the brick always burns differently in the kiln from the face, so it's a little darker and

you get a three-dimensional pattern, known as a "diamond" pattern, that is fascinating. It generates great strength in the wall because every other brick is a bond brick fingering back into the structure. I don't know any other building in town that has this on all faces and all sides. Sometimes, a facade will get this much elegance but not the whole body. In the days of this kind of detailing, it was considered important that the limestone pick up airborne dust and dirt in a controlled pattern. In the days when this form of detailing—mostly developed in Europe—was popular, there were wood stoves and coal stoves and there was a lot of airborne pollution. So the rendering of the shaping of the detailing by the deposition of airborne particles gave it more form, and architects really planned for that. The "corduroy" effect was a part of the design. Nothing would be absolutely dead flat because it would streak. Even the limestone in the flat faces is combed; there isn't a flat piece of stone on the building. I'd say they did a great deal of careful examination of the art in Europe, where your architects studied, and then brought it here with flourish and good judgment.

The carving of this stone is beautifully done. The fitting of the stone is so great that every bed joint is a "butter" joint. One does not see any wide caulking joints, which, after ten years, fall out much like chewing gum. You just don't have that in your building; it is a tightly integrated structure. You can see the differentiation of the header and the stretcher bricks so that you never get the pattern of a "running" bond, which is what most brick buildings have today.

I admire the ironwork. It is extremely well executed. There are no burnished areas for water to penetrate. The integration of the foils and the flat work is done in a forge—absolutely all handwork on an anvil—and the temperatures must have been exactly right. The whole fence was hand fabricated to be there for a long time. The small lantern at the top of the entrance—an exquisite piece of ironwork—was made by the same shop. People take things like this for granted, but to me it's a revelation of craftsmanship that we should protect and preserve.

As you proceed inside the fence, which certainly has the job of protecting the building, you see very fine artwork in the stone over the door headings on a much smaller scale *(Fig. 4)*. In this detail you see the way the brick fits; it courses out perfectly to meet the molding (no great big wide buttered-up joint because the artisan didn't figure it carefully).

Figure 4. Facade of the Hall on completion, 1909.

Inside the building, there is a great deal of beauty, too—the grapevine joint in the masonry, for example. If the joint has enough integrity to stay in place, you can put a knife cut in it. If the joint is made out of cement, it has to be weather struck and beveled back under the brick and tucked. So, looking at the joinery of your building, you can tell that the workmen really knew the mileage they wanted to get—thus, the grapevine joinery.

Every piece of limestone in this building has a "combed face." There isn't a single flat—what we call "sand finished"—face anywhere. That helps it weather and catch the light and shade effect.

Another condition we always look for in a building of this type is "sheer" cracks in walls. I looked all the way around the building, and I didn't see one sheer crack in the whole place.

There is so much real love in the building, so much real vitality. There's the wall of the "stacks," obviously considered to be a purely functional closure; but facing west into the sun, it looks like a bearing

wall without any articulation. In the days when this building was built, the stacks had their own light from the outside and the floors were glass, so the light cascaded right down through the inside of the stacks —a very ingenious system for using daylight throughout this building. Even the stacks have very elegant brickwork, with flat brick arches, recessed windows and a great deal of beauty at the back of the building, where nothing but some light for stacks was to be admitted. In itself, it is a very elegant pattern. I thought that these stacks were really fantastic. You can't fully appreciate them unless you go up there. The glass floors admit light through eight tiers all the way down to the concrete floors in the bottom and are self supporting. The same architect who made the stacks (and incidentally, the whole stack system for this building was bought for $37,000 in 1908, along with the stairs and an elevator) used conduit for the lighting. In 1909 every piece of lighting cabling in the building was in conduit—no open knob or tube wiring in the whole place.

Another element I admire is the rooftop. The four roof vents were originally made of terne metal. Today we use aluminum, but the terne metal is doing better than the aluminum vent (which can't be more than about ten years old). The roof is "clean"—no equipment poking out all over the place.

Now for my thoughts on rehabilitation. On these stout walls you could go up another story, and the storerooms that you need so desperately could be located there instead of over the skylights. Perhaps the skylight over the stairs and the *grand* skylight over the Mitchell and Portrait Rooms could be reopened and revived, and the aluminum roofing could be replaced with glass as it used to be. Then the whole heart and soul of the center of the building could come alive again. Maybe, by your one hundredth anniversary, you ought to try to put that in your budget.

Now for the interior crafting. There are some run plaster moldings in this building that are absolutely superb and in beautiful condition. I also like the old lighting fixtures. Most of all I like the stair. This stair must have taken some very good marble craftsmen at least a year to fabricate; and the fitting of the stair to the ironwork that supports the balusters is the best I have seen in this area. It is quite a piece of work, with a very complicated compound curve, difficult to build. The custom-cast iron supporting balusters that engage the railing fit like a glove. It is a piece of sculpture in its own right, and you don't enjoy it

because it is not properly lighted today. When I saw a piece of fluorescent tubing flash-lighting the marble, I thought: "Somebody doesn't know much about lighting because that is an insult to wood and marble." The frequency range of fluorescent light doesn't penetrate the graining of the wood or the marble; it almost makes it look as if it were painted. Whenever I want people and wood and natural materials to really be flattered by lighting, I use incandescent. Fluorescent can't do it — never could, never will. It's a flat tube source of a very poor spectrum and a very unflattering frequency. You have something there that's a great piece of sculpture, and I think you can't possibly go any place in this city and find anything quite so elegant. You would have to go to Italy to see something like this.

So, on we go hoping to recover the old skylight! It was the top light, roofed over, with secondary lighting and little bulb fixtures added to give some freshness to the space at night. The great skylight that has been roofed over really flooded this whole panorama of forms — the great stair, especially — with a natural feeling that man can't quite reproduce. Natural light is great; it changes every day, every season, every hour, and it flatters the inside of a building. Today, architects are straining their budgets to get top light into buildings. Most of the buildings we do today have some outside top light. We thought at first that it was energy conservation to get nature to light us up, so we have galleries, we have skylights, we have top lights, we have grand courts; all the new buildings have them. You had them seventy-five years ago and threw them away. You've got to go back and refurbish them.

The library with the fireplace was brought from overseas piece by piece. Every long beam spanning the library ceiling has about a 3-inch camber. The reason they are cambered is not because it's structurally so much better but so that when you look down the room, it doesn't look as if all the beams are sagging. The Greeks learned this, and they always curved their columns to look straight. They curved their steps upward to the center of the tread line to make them look straight, and they always arched a horizontal beam a little bit because, in space, a horizontal member always looks as though it's dipping. So, if you ever go into the library, just take a look at that delightful camber. The whole room looks strong and very much lofted by that camber in the beams.

The skylight in Mitchell Hall is covered over. It must have been a great piece of glass. Everyone who has remembered it has said it was really something. But nobody knows what happened to it. This, of

course, was an articulation of the ceiling, first of all to complement the oculus (the very baroque form in the middle), and, second, to accent the span in the room with the beams running east/west.

Interesting also is a floor system comprising a flat-arched terra-cotta tile, which had just come into being at about the time of this building. It's fireproof, it's strong, it will last forever, and it does have a good, solid feeling if you tap on the floor.

I really enjoyed studying your building, and I am so happy to live in the neighborhood so I can enjoy it. It's a real treasure, and I should like to help with its preservation and rehabilitation.

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Health Care in the 1980s: Changes, Consequences and Choices

WILLIAM L. KISSICK

The American health care industry had total expenditures of approximately $400 billion last year, more than $1 billion in the last twenty-four hours and $42 million per hour. That is twice the revenue of the American auto industry.

Looked at another way, we spent more than $1,600 for every man, woman and child in the nation last year. For a family of four that comes to $6,400, or the price of a compact automobile. Seldom do we think of a family trading off a new car each year for health care.

The $400 billion represents approximately 11 percent of Gross National Product (GNP), $1 of every $9 worth of goods and services produced in the entire economy. How much is necessary? The United Kingdom and Japan enjoy comparable health status for 5.5 percent of GNP. Canada, a society much like our own, does so for 7 percent of GNP.

Changes

The four decades since World War II have seen the evolution of health affairs from a $40 billion, physician-dominated, predominantly community endeavor into the $400 billion industrial colossus that employs us all. The dominant characteristics have been the rush to specialization of medical practice and the related marvels of biomedical research.

Personnel

In any human service endeavor such as health care, the labor force is the most critical basic resource. When one hears the terms "health personnel" or "health manpower," one usually thinks of physicians, nurses and dentists. Indeed, we number 1.4 million nurses, which exceeds the 500,000 physicians 3 to 1. When we add 100,000 dentists, the total of these professions represents less than one third of the

Adapted from an address to the Greater Philadelphia Committee for Medical-Pharmaceutical Sciences of the Philadelphia College of Physicians on September 26, 1985.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 2 (1986); 89-100.
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health labor force of six million. Half of the health labor force (three million persons) constitutes approximately three dozen occupational categories; e.g., physical therapy, podiatry, optometry, and pharmacy. The remaining one million workers are in the areas of secretarial, communications, maintenance, security, and other support staff that are common to virtually all industries. The result is an industry with some 600 job descriptions. Chrysler has 124 and Toyota, 72. Many observers correlate the role of fewer and more flexible job descriptions with productivity.

Moreover, these occupational groups represent career preparations that range from on-the-job training (OJT) following a grammar school education to twelve, thirteen, fourteen, and fifteen years or more of higher education. Many years ago at our dinner table, our eldest son, who was then six, asked, "Daddy, what grade did you finish?" I stopped eating and counted—high school, college, medical school, internship, graduate school, research fellowship, and residency. "William," I replied, "I completed the twenty-fifth grade." His response: "Out of sight!" He was in the first grade. He couldn't figure out what kept his father occupied for another twenty-four years.

Now, in 1985, we must ask how we evaluate the provision of care by a nurse practitioner (a sixteenth grader or less) as compared with a family physician (twenty-fourth grade at a minimum). This is but one of the many health personnel challenges we face.

When I was graduated from medical school in the mid-1950s, there were about 250,000 physicians in the United States, or 145 per 100,000 population. Last year we had twice as many, 500,000, or 226 per 100,000 population. Fewer than 7,000 were graduated from 80 medical schools in the mid-1950s. More than 17,000 new physicians were graduated by 127 schools of medicine in the United States this year. How many physicians do we need? It all depends on how they are used and what they do.

Facilities

Approximately 7,000 hospitals in the United States provide more than 1,000,000 beds. For years the Hill-Burton Program promulgated a goal of 4.4 beds per 1,000 population. The National Health Planning Legislation in 1974 reduced the figure to 4.0. Philadelphia has more than 5 beds per 1,000 population. By contrast, Kaiser Portland, a model Health Maintenance Organization, has reduced beds from 1.8

to 1.2 per 1,000 subscribers over the past decade; moreover, the executive leadership believes that they may still be overbedded.

Bed use (occupancy) is a product of admissions times length of stay. Nationally, over the past two years, admissions have fallen from 38 million to 36 million annually and average length of stay has declined from 7.4 days to 6.7 days. Hospitals in the Pacific Northwest average 4.1 days ALOS. With admissions and ALOS both declining, the result is empty beds and occupancy as low as 30 and 40 percent in some hospitals. Available beds are currently estimated to be 20 to 30 percent in excess of the needs of our population. That means major financial problems and hospital closures.

No two hospitals are really alike. They come in all shapes, sizes and sponsorship. Half are voluntary, nonprofit; they account for almost two thirds of the beds and the same portion of the admissions. The investor-owned systems, about which we hear so much, are 13 percent of the total and 15 percent of the beds. Public institutions (VA, state, county and municipal) have only 20 percent of the beds although they represent more than one third of the institutions.

Biomedical Research

No doubt every physician has had an experience that dramatizes most vividly the advances in biomedical research or technology. For one of my professors in medical school it was in 1942 at the bedside, as a medical student, when one of his professors, Dr. John Bumstead, administered penicillin to a woman with streptococcal septicemia. This first civilian use of the fruits of the labors of Fleming, Florey and Chang provided a cure they considered truly miraculous. For many this launched the era of modern medicine.

For me the experience centered on polio. I worked on the wards of the Grace-New Haven Hospital during Connecticut's last polio epidemic in 1956. There was little we could do. Children were crippled and adults died. Six years later in the spring of 1962, I stood in the parking lot of the Montefiore Hospital in the Bronx and gave sugar cubes soaked with Sabin oral polio vaccine to all who responded to our radio spots, newspaper ads and leaflets.

During the past four decades we have witnessed a virtual cornucopia of biomedical advances and technological innovations:

Tranquilizers	Total Hip Arthroplasty
Beta Blockers	Cardiac Angiography
H_2 Inhibitors	Coronary Artery By-Pass Grafts (CABG)
Cyclosporin	Organ Transplantation
Monoclonal Antibodies	Magnetic Resonance Imaging
Genetic Engineering	Laser Surgery
Amniocentesis	Lithotripters

Marvelous, yes, but remember, no matter what our accomplishments, the boundaries of our ignorance are infinite.

Emergence of an Industry

For the immediate post-World War II years and throughout the 1950s national health policy focused on the investment of public funds in the development of the basic resources—health personnel, health care facilities and research development. There was an implicit assumption that everything else would take care of itself and services would be provided.

Subsequently, it was recognized that all industries depend on the translation of basic resources into goods and services by what is called the "production function" or "entrepreneurial factor." In the health care system the financing mechanisms and organizational patterns that constitute delivery systems orchestrate the basic resources into health services. Since 1960, the building of the health care industry has concentrated on financing and organization.

Financing

The roots of contemporary health care financing can be traced to Dallas, Texas, where in 1929 the schoolteachers were apprehensive about the potential cost of hospital care and the Baylor University Hospital had a limited cash flow. A bargain was struck providing prepayment of a fixed sum per week for the commitment of hospital services if and when needed. This was the forerunner of Blue Cross.

Financing of health care since has evolved into a maze of inconsistencies, exceptions, adaptations and almost incomprehensible regulations. When cocktail party conversation turns to health care costs, I am often asked to explain and then to justify current practices, which I try to do with a minilecture as follows.

In most market endeavors we are accustomed to paying out-of-pocket in exchange for a service. In health care, only three of every

ten dollars are paid out-of-pocket by the consumer. Three dollars come from third-party insurance and four dollars come from government. Moreover, the portion of the total varies by product or service. For example, only 5 percent of hospital costs are out-of-pocket, in contrast to the vast majority of prescription costs. We pay for health care by many different routes.

Consider the dynamics of the transactions. Rather than the two-party interaction of most markets (the buyer and seller), the patient (party of the first part) consults a physician (party of the second part), who sends a bill to Blue Shield (party of the third part), who has sold a contract to the employer (party of the fourth part), who provides the employee (party of the first part) fringe benefits in lieu of wages. Not surprisingly, accountability gets lost in the process.

To continue, physicians are traditionally paid a fee-for-service while they, not the patient, determine the services. Capitation (fee per patient per year) and salary (fee per time) are also used. Interestingly enough, the British National Health Service uses all three payment systems at the same time for general practitioners.

The story becomes even more complicated. The hospital industry has been financed with insured payments of costs or even charges. The dominant pattern has been Retrospective Cost Based Reimbursement. That is the equivalent of my giving my twenty-year-old daughter my American Express credit card and assuming responsibility for all her monthly expenditures. What do you think would happen to her expenditures? Is it any surprise that hospital costs have risen 15 to 18 percent annually in recent years?

Medicare and Medicaid entered this maze in 1965. For two decades we pumped hundreds of billions of dollars into a nonmarket, poorly regulated and essentially nondisciplined system. As Professor Rashi Fein, the Harvard health economist, has said, "The invisible hand of the market in health is all thumbs."

The United States Congress, after almost two decades of frustration over health care cost escalation, authorized Prospective Cost Based Payment with DRGs (Diagnostic Related Groups). Now, by the authority vested in the Department of Health and Human Services by the United States Congress, there are 467 diagnostic categories by which Medicare patients can be admitted to a hospital. The 468th is "other." All hospitals receive virtually the same prospective payment per DRG.

Organization

Notwithstanding the tradition of solo practice in American medicine, the Mayo, Ochsner, Cleveland, and Leahy Clinics stand out as models of corporate medicine. The AMA fought the corporate practice of medicine for decades. In August 1985 Dr. Sammons gave it AMA's endorsement. Multihospital systems and the corporate giants of Humana/AMI/AME/and HCA are well known. Some authorities predict that virtually all hospitals will be part of multihospital systems by the year 2000.

The organizational initiatives getting the most action are Health Maintenance Organizations (HMOs), Preferred Provider Organizations (PPOs) and Medical Staff-Hospital Joint Ventures. The HMOs come in two forms: Pre-Paid Group Practices and Independent Practice Associations. Nationally, an HMO enrollment of 50 million is forecast for the early 1990s. One analyst asks what will happen in the early twenty-first century when 20 percent of the physicians will be on the staff of HMOs and providing care for the 40 percent of the population enrolled in HMOs. This would leave 80 percent of the physicians to occupy themselves with 60 percent of the population.

The new arrival is the PPO (Preferred Provider Organization). In this arrangement an insurance company recruits hospitals and physicians in need of business to provide services at a discount in exchange for volume. The insurance company in turn sells a discount package to employers, on behalf of the employees, who agree to use panels of providers. Nonemergency services provided outside the PPO require the consumer to pay deductibles, coinsurance or copayment. PPOs are growing rapidly. Their patterns vary widely. It is being argued that they will either become HMOs or fail. Time will tell.

Recently, we have heard of urgent care centers, emergicenters, or the pejorative "docs in a box." These are minigroups providing convenient walk-in primary care comparable to the solo practice experience of most physicians. Many refer, rather than follow, patients to hospitals. They advertise heavily, usually with the name of a center (Med First, Ready Care, Health Right) rather than the names of the three or more physicians on the staff.

Consequences

The past four decades of health care have been a dramatic journey

from a cottage industry to a colossal enterprise. Several observers have attempted to capture, in a phrase, the essence of that change:

Eli Ginzberg, an economist: Monetization of Medicine;

Arnold Relman, a physician: Rise of the New Medical Industrial Complex;

Paul Starr, a sociologist: The Social Transformation of American Medicine.

For me, the change is cultural, economic, political and technological as well as social. I call it the Secularization of Health Affairs. The doctor-patient relationship, once a sacred trust, is rapidly deteriorating to a commercial transaction between discount shoppers and some "docs in a box." This paradigmatic shift from sacred to secular or temple to marketplace is more profound, pervasive and provocative than monetization, social transformation or industrialization.

Several of the more prominent consequences of the above change are:

1. *Productivity or Rationing*

Will we achieve more for less or be forced to do without? My students in the School of Medicine are convinced that no cost is too great to save a human life or to treat disease. But across the campus in the Wharton School students are taught that resources are by definition limited and that choices must be made. Therein lie the conflict and challenge of medicine and management.

Productivity will not avoid the entire need for rationing. In 1960 when I began my career in health care planning and management, the United States devoted 5.3 percent of Gross National Product (GNP) to health and medical care. It was not enough. Last year (1984) we spent 10.6 percent. It was still not enough to meet all needs as we perceived them. I predict that if we achieve 14 percent of GNP in the year 2000, as forecast by the Health Care Financing Administration, it will still not be enough.

Guido Calabresi in *Tragic Choices* and Henry Aron and William Schwartz in *The Painful Prescription* discuss the issues of rationing of medical services. Increased productivity can offset some rationing. The opportunities for doing more and more at each end of the life span seem infinite. We can't do everything for everyone. Productivity in search of cost-effectiveness will help. Rationing is inevitable.

2. *Competition (Collaborative or Adverse)*

There are five allopathic medical schools in Philadelphia and one

school of osteopathy. They are Hahnemann University, Thomas Jefferson University, the Medical College of Pennsylvania, the University of Pennsylvania School of Medicine, Philadelphia College of Osteopathic Medicine and Temple University School of Medicine. They compete for students, faculty, patients, research grants and new facilities. Over the years there has been room in the city for all of us.

As noted above, last year 127 medical schools in the United States graduated 17,000 newly minted physicians. The Graduate Medical Education National Advisory Committee Report forecasts a physician surplus of 70,000 in 1990 and 145,000 in the year 2000. How do Philadelphia's medical schools respond? Some suggest that we each reduce enrollments proportionately. The market solution, in the interests of efficiency and economies of scale, would be for the strong to expand market share at lower marginal costs. If one thinks of the six medical schools as Apple, Atari, AT&T, Commodore, Digital and IBM, each would be intent on growth and increased profits.

Competition in medicine is more than a new word for us. It is an altered way of life, and we have yet to appreciate the full implications of substituting entrepreneurial for eleemosynary impulses in health affairs.

Incidentally, the rapid trend of advertising from the ethically dubious to the rampant is something to behold. While still subdued, it is increasing in frequency, polish and punch. Every time I see a Wendy's ad on TV, I envision Urgicenters substituting, "Here's relief!" for "Where's the beef?"

3. *Corporate Restructuring*

Hospitals are turning more and more to corporate restructuring. This is an effort to incorporate profit-making subsidiaries into voluntary not-for-profit corporations; to adopt vertical hospital systems that integrate different levels of care from tertiary to ambulatory to home care; to prepare for lateral mergers or contract management; and finally, to facilitate joint ventures with physicians.

One of its more interesting devices is the creation of a small corporate board of directors of a holding company for the hospital and its new partners. The boards of trustees, superseded by the holding company's board of directors, are larger and fiduciary in responsibility. This rich tradition is subsumed by a board of directors with a strategic and anticipatory initiative.

The main dimension of corporate restructuring appears to coalesce

hospitals, physicians and insurance companies. Kaiser has done this for five decades. The scale of this pluralism is now extensive. If General Motors or IBM were to buy HCA or Humana, the party of the fourth part would have hegemony over the parties of the first, second and third parts. Such was actually common with timber, mining and rail companies in the 1800s. The United Mine Workers built a system of hospitals and hired physicians in the 1950s to care for its members in Central Appalachia. For the present, the parties of the first, second and third parts are crossing traditional boundaries in health affairs.

4. *Health Care: Social Good to Market Good*

The health care system in the United States is pluralistic. If one were to array its components on a linear scale from zero (representing free enterprise) to 100 (government ownership and control), the majority of the elements would range between 40 and 70 on the scale, a mix of initiatives that might be characterized as a "quasi-private, quasi-governmental, community-oriented enterprise." In a few words, all things to all people.

Market segmentation is a new concept in health care. Health planning in the late 1960s and 1970s had to face the health needs of the entire population and develop health resources to respond. In contrast, a market segment identifies groups by age, sex, residence, occupation, and so forth, and tailors a service in search of profits. Unprofitable segments are abandoned or ignored. What, then, is to be done for the 37 million who have limited or no access to health care because of inadequate or no health insurance coverage?

The road to the secularization of health affairs is strewn with many victims. The move of health care from a social good to a market product manifests the classic dilemma of equity and efficiency. An enlightened institutional infrastructure of modern organized society ought to be capable of both.

5. *Professions to Labor Force in Health*

Twenty-five centuries after Hippocrates, physicians are threatened by an erosion of their authority, prerogative and status. They see their independence as members of hospital voluntary staffs being supplanted with salaried employment by HMOs and multihospital systems.

I recall public opinion surveys when I was a house officer in which physicians ranked second only to Supreme Court Justices in stature and prestige. And yet there were only nine justices and a quarter of a

million physicians! Subsequently, Dr. Marcus Welby enhanced our public image. Last year, Dean George Gerbner, of the Annenberg School of Communications at the University of Pennsylvania, reported a multiyear study of the perception of the profession in the media. Even then we shone like Apollo.

But what is happening in reality? Authority is being challenged by second opinion; peer review is being substituted for clinical prerogative in determining hospital admission; lawyers are taking questions of quality of care and outcomes into the courts with malpractice suits.

And yet 38,000 potential recruits applied last year for admission to our profession! It is around them in the next few years that the major issues of our future will be decided. Moreover, the profession of medicine will determine precedents for dentistry, nursing, podiatry, optometry, pharmacy and other health professions. Society has an extraordinary vested interest in medicine, as the archetypical health profession.

Choices

Changes in health affairs have short-term and long-range implications. Taken together, they force us to the following choices:

1. *Selection of practitioner or service,* the leading area of choice affecting consumers and providers alike. The expectant mother can select an obstetrician, a family physician or a midwife. One can choose an orthopedist or a podiatrist. For some eye care, ophthalmologists and optometrists offer similar services. There are also options for the organization and payment of services. How much risk do you want to assume? Do you want coinsurance, deductible, or copayment offered predominantly by indemnity insurance or comprehensive coverage? Moreover, increasingly you can choose among alternative delivery systems.

A full-page advertisement appeared in a recent issue of *Newsweek* for the Associated Professional Directory, offering, free on request: "information . . . crucial to making an informed decision — and an informed decision is always the right choice." Brief résumés of physicians, dentists and podiatrists were included.

2. *Citizen participation* is an area of increasing choice. In health in the late twentieth century we are moving beyond the professional associations such as AMA, AHA, ANA, AAMC, and APHA and are being joined by consumer special interest groups.

As Alexis de Tocqueville observed more than a century ago in *Democracy in America* our society has a plethora of special interest groups. The American Cancer Society and the American Heart Association are traditional special interest groups in health. The American Legion and the Gray Panthers are excellent examples of organizations of broad concerns that have a health priority. HealthPac was organized in the late 1960s to lobby for community health programs. The Committee for National Health Insurance followed. One of the most active nationally is the Washington Bureau Group on Health. These are probably prototypes for modern HealthPacs modeled after contemporary organized political action. The role of unions in bargaining for health insurance coverage has been dramatic.

All patients and consumers participate in health affairs through a response to appeals, letters to the editor, communication with political representatives, and the ballot box. To paraphrase the French statesman Clemenceau, "Health is too important to be left to professionals."

3. *Involvement of consumer in resource allocation* is emerging in HMOs, whether group practice or Independent Practice Associations, Preferred Provider Organizations, or Medical Staff-Hospital Joint Ventures. Joining as a subscriber is one level of involvement. Confronting the decisions of resource allocation is another. How involved as citizens will we become in our own destiny? Are we ready to move beyond our role as provider or patient?

I first began to think differently about the patient during my internship. A nurse on one of the surgical wards had been an airline stewardess before going to nursing school. One day she walked into the doctor's station and asked, "Dr. Kissick, would you check the passenger in the room at the end of the hall?" I chuckled and headed down the hall. As I reflected on the nurse's Freudian slip, I found a provocative commentary. A passenger, after all, may be as dependent on the pilot as the patient is on the physician; however, the passenger enjoys more autonomy and authority *vis-à-vis* destination, route, carrier and schedule. During the twenty-five years since, I have watched the evolution of patient to passenger to consumer to constituent.

How are we going to make crucial choices? I reflected on this recently while visiting the chief executive officer of a 325,000-subscriber HMO. It occurred to me then how much priorities for resource allocation must attempt to reflect *all* stakeholders' interests. For example, what will be the strategy for attacking breast cancer — self-

examination, nurse practitioner, physician examination, mammography, biopsy, or all of the above? For the consumer/constituent it's her money and her life — a pretty good incentive for her involvement in these decisions.

Conclusion

The Greek philosopher Heraclitus wrote in the sixth century B.C., "Nothing is permanent except change." The change in health affairs is provocative, pervasive and profound. Undoubtedly readers can identify consequences I have not mentioned. Our pluralistic, pragmatic society appears to be capable of choice, and that, after all is said and done, may be the bottom line of the Secularization of Health Affairs.

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Dr. Albert L. Shelton (1875–1922) and the Tibetan Collection in the Newark (New Jersey) Museum

FRED B. ROGERS

Dr. Albert L. Shelton, an intrepid medical missionary to Tibet early in this century, is best known today by the marvelous Tibetan Collection of Art now in the Newark Museum. This famed collection, which includes a Tibetan Buddhist altar, hundreds of prayer scrolls, costumes, ornaments and photographs, is one of few extensive troves of such treasures in the United States. On October 15, 1979, His Holiness the Dalai Lama, spiritual leader of the Tibetan people, visited the Newark Museum during a tour of this country, and in 1981–82 the Museum mounted a major exhibition, "Tibet: A Lost World." This exhibition, which traveled to several other cultural centers across the nation, displayed more than 225 works representing Tibetan arts, crafts and objects of everyday life.

Owing to its secluded geographical location, Tibet has always been a private and somewhat mysterious country. Western knowledge of its people and customs was formerly restricted to information derived from travel reports of a few daring explorers, journalists and missionaries. Such a person was Albert Leroy Shelton, who was born in Indianapolis, Indiana, on June 9, 1875. When he was five years old, he moved with his family to Anthony, Kansas, in a rural setting. In 1895 he entered the College of Emporia, Kansas, leaving thereafter to serve with the 22nd Kansas Regiment during the Spanish-American War. After army service he studied medicine at the University of Louisville, Kentucky, receiving his M.D. degree in 1903. In the same year he was appointed a missionary of the Disciples of Christ (Christian) Church and was dispatched to Asia. At Batang, on the Tibetan border, Shelton and his colleagues later founded a hospital to care for Chinese and Tibetan people. Their fine work in the land at the roof of the world is a matter of record.

Dr. Shelton met Edward N. Crane, a Newark Museum trustee, on a return voyage from the Orient in 1910. As a result of their friendship, Shelton's collection of about 150 Tibetan objects was lent to the museum. During the following year Mr. Crane died, and his widow and his brother, Arthur M. Crane, purchased the collection and pre-

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 2 (1986); 101-104.
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Figure 1. Albert L. Shelton, M.D. Photograph in *The Literary Digest,* June 3, 1922.

sented it to the museum in his memory. It became known as the Edward N. Crane Memorial Collection. Additional material acquired from Dr. Shelton by gifts of museum trustees in 1914, 1918 and 1920 is known as the Albert L. Shelton Collection. Subsequent gifts and purchases have augmented this Tibetan treasure.

Tragic circumstances made it possible for Dr. Shelton to acquire his extraordinary collection. During the first decade of the twentieth century the Chinese invaded Tibet. Batang, a frontier town, was the scene of fierce fighting. Its great lamasery was destroyed, and the Tibetan prince who ruled Batang was executed. In 1911, on the fall of the Manchu Dynasty, the Chinese withdrew from Tibet proper but continued to control the Tibetan territory east of and including Batang. In this turbulent area Albert Shelton lived and worked from 1908 until his death in 1922. Previously he had spent five years in the half-Tibetan city of Tatsienlu. His service to the sick and wounded earned him the friendship and gratitude of many people. With the destruction of the Batang lamasery, numerous books, paintings and ritualistic ar-

ticles were dispersed. Many such sacred objects were given to or bought by Dr. Shelton. A son of the royal family went on several trips with the doctor and was with him when he was shot to death in ambush by a robber band of Khampas on February 17, 1922.

The doctor's wife, Flora Beal Shelton, and their two daughters returned to the United States, where the widow compiled an account of his career entitled *Shelton of Tibet* (1923). A colleague, Dr. Abram E. Cory, wrote the following tribute:

> Shelton was a great physician and surgeon. The hospital at Batang will always stand as a monument, even as a piece of architecture built in the face of the most trying conditions. In this hospital he and his associates treated with great skill Chinese and Tibetan patients and won wide reputation. . . . Shelton acted as doctor and as peacemaker, condemned brigandage, and used every talent for God. He endured trials as only a man of faith and a man of humor can endure them. . . . Through the ministrations of a prominent lama he secured the consent of the Dalai-lama himself to go to Lhasa to establish a hospital and train medical workers; he was killed by bandits as he was starting on that lonely pilgrimage.

The superb Tibetan Collection now housed in New Jersey's Newark Museum is an appropriate memorial to this adventurous physician-humanitarian and his noble work.

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Dialogue with Animals

AARON H. KATCHER AND ALAN M. BECK

The dog has been domesticated for perhaps 12,000 years,[1] and as early as 5500 B.C. dogs were included in human burial sites.[2] Since then, companion animals have had important symbolic roles in many cultures and historical periods. Sometimes animal forms were used to portray deities, and actual animals were assigned important social and ritual roles. For example, in the folklore of the Kato Indians of California the Creator "took along a dog" during the very creation of the world.[3] In the folktales, mythology, allegory, and wisdom literature, animals were always assigned human roles, speaking and acting as human beings but retaining their animal form.

In one way or another, most human beings have wished that animals and people could speak a common language. The very widespread popular attention given to the research reports purporting to demonstrate that pongid apes could learn grammatical speech attests to the strength of that wish within our own society.[4] Although it is doubtful that either apes or dolphins can learn human speech, humans persist in talking to animals. We have, however, very little historical or anthropological information on *how* people talk to animals. Though the tendency to treat animals like family members was noted by Plutarch,[5] we do not know how people assign actual animals to social roles. There is little evidence that this took place with any frequency until urbanization began to accelerate in the eighteenth and nineteenth centuries.[6] In the nineteenth century the sentimentalization of animals and nature became an important cultural theme for the newly urbanized middle class. Presently, American folk wisdom assigns important roles in family life to pets. Sentimental descriptions of the good life for children have always included their pets. These were assumed to be good companions and good teachers, providing lessons about love, loyalty, birth and death.[7]

Recently, two demographic trends have increased our consciousness of animal companions. There has been a change in the pattern of family life, with a decrease in the number of children in families, higher divorce rates, and more people remaining single, or raising children in single-parent households. Second, more people have been living in dense urban housing and more women have joined the work force,

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 2 (1986); 105-112.
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both trends restricting opportunities for keeping pets. On the one hand, the need for animal companions has increased as family life has been eroded; and on the other, pet keeping has become progressively more difficult for many people. This conflict has stimulated a new awareness of the role of pets in the family.

Scientific Study of Human Animal Interaction

Only within the past ten years has there been any scientific study of the phenomenon of pets and their social roles.[7,8] A new awareness was an outgrowth of two kinds of medical investigation, both influenced by a belief that social contact has mental as well as physical healing virtues. Levinson,[9] a clinical psychologist who treated children in an outpatient setting, noted that some children were too withdrawn to talk to a therapist but could establish a dialogue with a pet. This person-to-animal interaction facilitated dialogue with the therapist, and that, in turn, helped a patient to reestablish contact with family and friends. The same progression of social facilitation was also observed by the Corsons[10] when they offered pets to psychiatric inpatients who were refractory to conventional treatment.

Another line of research started from the premise that social relationships could protect physical health and that social isolation was associated with increased vulnerability to disease. In a study of the influence of social support on patients with severe heart disease, the authors noted a better one-year survival rate in patients who had a pet.[11] These clinical observations stimulated a line of research into the role of pets in the American family and the physiological, behavioral and psychological changes that take place when people interact with them.[12,13]

Dialogue with Companion Animals

For the past eight years we have been studying the interaction between essentially normal urban residents and their companion animals. We have used a variety of research techniques; ethological observations of naturally occurring situations, experimental studies of the physiological and behavioral response to programmed interaction with pets, interviews with individual pet owners, and questionnaire surveys. This body of research and other recent studies of human-animal interaction have permitted us to make the following descriptive generalities about dialogue with pets.

Pets have a status in the family. A person with a pet can feel that he or she has actually established a family. From 50 to 80 percent of persons surveyed describe pets as family members.[14,15] Indeed, the presence of a pet provides the owner with all the responsibilities of the head of a household. The tendency to describe pets as family members is independent of the presence of other human family members, including children. When subjects are asked to describe the family status of a pet, the most common response is "child." Pets play important roles as "eternal children" in families with children growing up into adults.[7]

Interaction with pets is frequent, varied, and prolonged. People talk to pets as they would talk to other people. More than 66 percent of dog owners and 95 percent of bird owners report talking to their animal frequently. The conversation is not necessarily trivial, as more than 26 percent of people with dogs and 17 percent of people with birds confide in their animal. They spend much of their days in companionship with pets and sleep with them in the same room or even in the same bed at night.[7,14]

Dialogue with a pet is calming. Talking to an animal had different physiological consequences than talking to another human being. In clinical or experimental conditions, talking to other people is associated with highly consistent and frequently large transient elevations in blood pressure.[16] However, talking to an animal produces significantly less blood pressure elevation than talking to a person, and in some subjects blood pressure falls below the resting level during affectionate dialogue with a pet.[12]

Dialogue with pets combines touch and talk. Initially, we wanted experimental subjects to alternate between talking to us and touching their animals. Like many other experimental oversimplifications, this strict design of separating talk and touch was defeated by social conventions that regulate communication between people and animals. The subjects *always* talked to their animals while petting them. Owners would stroke their dog or bird as if they were alone in the room without any regard for the experimenters, student observers, or videotaping and blood pressure monitoring equipment. They lapsed into this intimate space by lowering their voice almost to the point of inaudibility, and we had to use a sensitive lapel microphone for our recordings. Occasionally, they would recognize their perceptual distance from the experimental team by raising their voice to address the

experimenters and translating what *they* were saying to the animal.[12] The study of touch contact between people and pets, which was made during this experiment and during ethological studies in clinic waiting rooms and in the home, indicated the universality of this kind of touch-talk dialogue. We determined that there were no significant differences in the way men and women use animals for affectionate touch.[14] Every dog owner and more than 93 percent of those with birds touch or handle their animal each day and more than 70 percent of dog owners and 67 percent of bird owners report spending at least two hours daily in direct contact with their animal. Since men are reported as being more touch inhibited than women, in most circumstances, pets may be singularly important for men with restricted opportunity for enjoying human affection.

Dialogue with pets is stylized. Human beings have a particular style of dialogue with pets, with consistent changes in facial expression, voice pattern, and verbal inflection. Although the analysis of the interaction with dogs and birds is still in its early stages, the pattern seems quite clear and appears to have the following characteristics:

(1) where possible, the head of the person is placed close to the head of the animal;

(2) the volume of the voice is reduced, sometimes to a whisper;

(3) the voice pitch is raised above that used for conversation with other people;

(4) the rate of speech and the length of individual utterances of sound are decreased;

(5) there is considerable verbal play with the words, combinations of words and sounds, and stress and length of syllables; and

(6) utterances are terminated with a rising inflection to emphasize or pose a question in order to create a pseudodialogue with the animal. In this "dialogue" either the person may supply a response or insert a pause as if to permit a response.

These changes would be expected to reduce arousal. They resemble the style of dialogue between adults and young infants. There are, however, certain characteristics of dialogue between people and pets that are distinctly different from those used with infants. The most striking differences are found in the facial expressions used and in the level of excitation conveyed in the interaction. Parents tend to use exaggerated facial expressions with a child as if they were trying to teach the child appropriate emotional responses or aid him or her in

the recognition of facial expressions. In the interaction with animals the face is remarkably composed. The brow is usually smooth, the nasal-labial fold is flat and the eyes are partially closed. This appearance of relaxation is accentuated by a less conspicuous smile when talking to an infant or an experimenter. The smile used with an animal is more like the one seen when a parent looks on a sleeping child.

A second special characteristic of intimate interaction with companion animals is related to the level of arousal communicated. With young infants, the parent will use arousing styles of speech and facial gestures to capture the child's interest. With animals, free to move actively, increasing the level of arousal will either cause the animal to want to escape, or, less frequently, to attack, or may increase the intensity of the interaction until it no longer has the characteristics of intimate dialogue but constitutes play instead.

Communication with animals was clearly reciprocal. As humans kissed and nuzzled their animals, both dogs and birds responded as if they were interacting with a conspecific animal. Dogs would exhibit appropriate submissive postures ordinarily reserved for dominant members of the pack, and birds would behave as if trying to groom the person and further indicate participation by feather ruffling, neck bowing and pecking in an inhibited manner.

The Presence of an Animal

Pets, even in the absence of dialogue, have the ability to reduce anxiety and arousal in both experimental and clinical situations. Not only do we anticipate relaxation from interacting with an animal; we also behave as if the presence of an animal is a signal that a situation is intrinsically less stressful and safer.

In an experiment with children, young subjects were brought into a living room, where they were greeted by a gentle female experimenter either alone or with a dog. After being fitted with a blood pressure cuff, the child was permitted to relax and then pressure readings were taken while the subject rested and read aloud. The children's blood pressures were lower while resting and reading aloud when the dog was present. This relaxation occurred even though the child did not interact with the dog.[13]

In another study, two groups of psychiatric inpatients were asked to voluntarily attend fourteen weeks of daily group therapy with the same therapists, the only difference being that one group met in a

room with two cages of birds present and the other in an identical room with no animals. The group that met with birds in the room voluntarily attended therapy sessions significantly more often, contributed more frequently to the discussion and demonstrated less hostility as assessed by a standardized psychiatric evaluation performed before and after the experimental period.[17]

Looking at animals does more than alter our perception of the environment. How people look at other people with animals has important implications; pets appear to change the way people are perceived by others. People are more socially attractive when in the presence of pets. People shown rather ambiguous line drawings were asked to rate the depicted people with adjectives that indicated a measure of social attractiveness. Not every subject saw the same pictures; some saw people in basic settings while others saw the same people in the same poses but with an animal in the drawing as well. The subjects observing scenes that contained an animal rated the people in the drawings as more attractive than the same people with no animal present.[18] This phenomenon has been exploited by politicians during elections and has important implications for educational and recreational programs. It may be especially important to people with a variety of handicaps.

To understand how the mere presence of animals communicates a sense of relaxation and even safety, it is useful to remember that for millions of years our primate ancestors watched the behavior of other animals to learn of the presence of danger, predators, and the proximity of food and water. The sight of resting animals, or animals behaving normally, signaled a lack of danger. After the dog was domesticated, the sight of this now tamed wolf in an unagitated state indicated that all was well. In the thousands of years since domestication, the emerging system of symbols associated with animals reinforced our belief that the calm animal, whether a resting dog, cat or calm bird or fish, signaled that no danger was present. Since, in reality, a calm animal does indeed mean that nothing is wrong, we have unconsciously learned to associate the presence of animals behaving normally with a safer environment.

Finally, the roles that pets play have important implications for physicians. Pets can be both a health resource and an impediment to medical treatment. Hospitalization can be threatening to pet owners unless they are given help in providing for their pets.[19] When a child

is allergic to an animal, the necessity of disposing of a family pet may be a source of extreme difficulty for everyone and may lead to chronic noncompliance with medical regimens and mistrust of the physician.[20]

Questions about pets provide important insights into family dynamics and family resources. Acquisition of a pet or a change in the way a patient uses natural recreation areas such as parks, wilderness areas and zoos may be an important means of reducing stress and loneliness and providing companionship and stability.

Summary

The relationship between people and their companion animals may be an important part of the total health picture and must be appreciated as such by all those responsible for the well-being of the public.

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Public Attitudes Toward the Control of AIDS: The Homosexual's Plight

PERRY OTTENBERG

It is the purpose of this article to clarify misapprehensions aroused in the medical professions in the investigation and management of Acquired Immune Deficiency Syndrome (AIDS). With the formidable rise in its incidence many unresolved social issues have resurfaced that were swept under the carpet during the 1960s and into the 1980s — issues related to prevailing sexual behavior and its consequences. Many fears and fantasies are evoked by AIDS that, when held collectively, induce a plague terror. These fears may lead to a demand for mass screening and the rigorous segregation of victims of the disease, with suspicions abounding in family, friends and colleagues. Fears, realistic or otherwise, are aroused by a handshake, a kiss, a shared morsel of food or any simple physical encounter. Eventually, anyone remotely suspected of harboring the disease is viewed as a threat. Quite naturally, homosexuals, drug addicts and prostitutes are the primary source of this emerging xenophobia.[1]

AIDS affects millions of people throughout the world. It infects all classes of people and ultimately the children of infected mothers. It must be coped with in schools, in the streets, housing units, recreational centers, restaurants, businesses, churches, military posts, colleges and hospitals. Fear of it arouses both warranted anxiety and the irrational dread of contagion and death. Early attention to homosexuals as the primary source of AIDS has extended to intravenous drug abusers, hemophiliacs, prostitutes and their children. It is not unusual for innocent victims to be blamed for their disease. It may be that, as more celebrities are touched by AIDS, with the publicity already devoted to a few, more research funds will be forthcoming.

We are contending with a relentless killer. All those who become clinically affected will probably die within a short time. Diagnostic tests have been contrived that detect the AIDS antigen, and several viruses have been identified, but the treatment still eludes us.[3] As the number of cases increases, screening tests will identify tens of thousands of carriers in hitherto unsuspecting communities, and the political turmoil that will ensue may well lead to massive governmental

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 2 (1986); 113-120.
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panic, or deliberate rejection of governments. There will be economic reverberations on a grand scale. International tourism, for example, is already suffering from the threat of high prevalence and lack of control programs in many of the poorer countries. This will have a profound effect on foreign exchange funds.[12]

Sexual Behavior

The disease is commonly spread by promiscuous sexual contact or the sharing of contaminated needles. In women, especially in the impoverished conditions of several African countries, AIDS is related to prostitution, scarring and sexual mutilation.[4] Reservoirs of the virus in central Africa and Haiti may potentially stir racial prejudices against blacks as vectors of the disease. It is not generally known that sexual exploitation through tourism has existed in many third world countries in recent decades. Some underdeveloped countries cater to the preferences of affluent travelers for young partners, male and female prostitutes and other freakish, commercialized activity. Part of this exploitation is a legacy of colonialism and gradual social breakdown that has led to endemic poverty.[7] Poverty in Africa and other developing countries has led to the merging of aggressive and sexual fantasies that is lived out in prostitution as a form of abuse. Disproportionate numbers of male black transvestites hustle the streets of many Western cities. Multiple courses of chemotherapy for an endless number of venereal diseases may lower an individual's resistance to the AIDS virus and encourage other resistant strains of infectious disease. Recognition that the "green monkey" or swine virus may serve as a reservoir of AIDS-related virus in Africa suggests that the avenue of infection may be by ingestion or bestiality. Thus, several varieties of anxiety can fuse into one common, mass fear of infection from one recognized source in blacks, a force that can undermine decades of approach to racial amity. In this connection it is worth remembering that physicians and all those dedicated to health care are ethically bound to treat the sick and their families regardless of private misgivings about life-styles, however repugnant, that arouse their fear.[5]

Changing Sex Roles

An open acceptance of gay, lesbian and bisexual life-styles has emerged across the United States in recent decades. It is concentrated in certain cities where tens of thousands of like-minded people live and enjoy

recreation. Changes in our sexual mores reflect the new collective power of these groups as a political minority aspiring to equal treatment and recognition under the law.

Some professional organizations, such as the American Psychiatric Association, after years of internal debate, have changed their disease nomenclature to remove homosexuality as a pathological diagnosis in all cases. The history of caring, long-term homosexual relationships, although beset by the same interpersonal problems as any heterosexual couple, contradicted the social discrimination and private prejudice society had for centuries accorded homosexuals. Truly consenting adults privately are free to behave sexually as they wish with each other. This position by the American Psychiatric Association, along with numerous allied professional groups, aroused vehement disagreement within its own ranks. Several psychoanalytic societies were especially stung by this liberalization of sexual attitudes. Not all psychiatrists accepted the movement toward tolerance of changing life-styles, nor did all psychoanalysts oppose the change.

Community Concerns

Sexual fears lurk in almost everyone; anxieties about sexual performance, attractiveness and gratification are panhuman. Perhaps underlying the macho, promiscuous behavior prevalent in many societies is a tendency to equate prowess as a male with incessant sexual activity. Promiscuity, practiced in certain public facilities, can act as a reservoir for AIDS. It is the responsibility of each urban authority to regulate bars, bathhouses, public lavatories, parks and illicit meeting places. Public sexual contact, as well as public drug use and dealing, can be controlled; it is not healthy for adults or children to be routinely exposed to public traffic in sex or drugs. Why should one accept a drug abuser on one's doorstep or sexual assignations in playgrounds or on street corners near homes, schools or businesses? No one denies that society has an inherent obligation to screen, regulate and prevent AIDS as it would any other epidemic.

Private businesses that offer anonymous sexual contacts have abandoned all moral and ethical responsibility in what they do to disseminate AIDS. As long as it is not viewed as a conflict of public health measures versus civil rights to regulate the preparation of food, purity of water or the use of seat belts in cars, there is no cause to hold back from enforcing health standards in *everyone* in public places. The cost

to society of addiction to drugs is of infinitely more importance than the rights of a small minority to sexual promiscuity. The political implications of AIDS are of increasing concern to the public; and if our elected leaders do not take strong action, they are going to be voted out of office.

Fear of Death

Since AIDS is a lethal disease, we must carefully consider not only the anxiety it stirs in the public but the overwhelming dread it brings to its victims. Most people cannot tolerate too much anxiety without a tendency to oversimplify its cause, to concentrate the threat on some source and leap to premature action. Commonly the victim, stereotyped, becomes the target. Can it not be that he, already aware of the inevitability of a particularly loathsome death, deserves a respite from our judgment and access to the most merciful care? Many homosexuals, drug abusers and prostitutes were already, prior to their illness, lonely and isolated individuals. For them "dying" has always been an implicit risk in their way of life, associated with assault, commercial exploitation, exposure to drink, crime, drugs and even murder. Their thinking, as their experience, is not *our* thinking. Painful urges to become victimized are part of the human condition that has been described all through history and literature. For many, AIDS is only the final abuse in a life of pain.

How far can we as physicians go in helping a dying patient accept his death? Each of us has to deal in every AIDS case with the meaning of our own failure. How do we accept our professional limitations without feeling inadequate or rejecting the patient for not enhancing our self-image as a physician-curer? Sharing the process of dying — making oneself available for closeness, sympathy, contact, alleviation of pain — means more than perfunctory well-wishing "rounds" or palliative "drugs." Genuine caring accepts and deals with the true needs of the patient. Death is the ultimate narcissistic threat for both patient and physician. A physician's status provides considerable personal self-esteem for most doctors, but the treatment of AIDS threatens any physician who rationalizes his or her deeper fears of contact.[8] There already exist many problems in the distribution of medical care for the chronically ill hospitalized patient; therefore, the care of AIDS sufferers may easily fall between the cracks of social neglect and financial stringency.

Fear of Contagion: Suggestibility

Homophobia exists in many elements of our society. Homophobia coupled with fear of contagiousness is the social counterpart of individual suggestibility. The more anxiety dominates a person's mind, the more suggestible he becomes; and his fear, shared, leads to a siege mentality. This leads to vigilantism. The pursuit of intimacy is a lifelong task for most people. And, paradoxically, it is often associated with fears of sexuality. Many find promiscuity deeply degrading to their value system and, against this background, AIDS is viewed as sinful. In some secular and religious communities it is regarded as proper punishment for evil behavior, to be justified as punishment rather than sympathetically treated. The homosexual, addict or prostitute is now seen as the reservoir for social contamination. The victim contains a life-threatening "virus" or invisible agent that slowly destroys whomever it contacts. Disgust is a reaction often used to block recognition of both fear and desire, a reaction that varies from culture to culture in its symbolism, pervasiveness and linkage to social roles.[10]

At the same time, it is too narrow a psychiatric formulation to relate all of the overreaction to AIDS to our own unresolved promiscuous urges. Some homophobic attitudes are psychic defenses that ward off fears in individuals concerned about helplessness, femininity and penetration. One common fear of adolescents appears with the threat of entering the army, dormitory life or separation from the family. Rampant homosexual fears in certain situations lead to counter behavior to reinforce a macho image. One neglected question in social research is how much anonymous homosexual promiscuity has a similar psychological basis to heterosexual promiscuity and compulsive drug abuse. Anxiety-struck homosexuals and heterosexuals compulsively drink, use drugs and frequent prostitutes, thus contributing to the self-destroying urge to expose themselves to an action that will bring on the very helplessness promiscuity is supposed to ward off.

Changing Attitudes

General physicians and psychiatrists have, during the past several decades, become more tolerant of gay life-styles. Deans, department heads, hospital administrators, admission and search committees, and training directors may still harbor private preconceptions about homosexuality in their peers, but the social system in American life has

become more tolerant. The persistence of treating all homosexuals, lesbians, bisexuals or transvestites as "sick," "regressed," "immature," and "infantile" is a social stereotype. Homosexuality is homosexuality, not "sickness." There are many heterosexual males who have feminine identification within their life-styles. There are many homosexual females who harbor male identifications.

There has been progress in how major religious, political and medical institutions accept homosexuals. Each major institution has to recognize the needs of its homosexual constituents in its operation to prevent prejudice and discrimination. Civil rights victories have lessened the frank discrimination against homosexuals in industry, military and other political areas.

Pornography

The media places excessive emphasis on instant love, romanticism and sex as *power.* A subtle encouragement of violence in the media confuses sex as masturbatory gratification with love. In the fringe areas of urban decay surrounding and inside the world's major cities, there have proliferated lucrative pornographic businesses. Pornography is a degraded and depersonalized sexual outlet, more closely linked to sexual roles of aggression than of tenderness and caring. The prevalence of "porn businesses" involving billions of dollars indicates how much our current attitudes toward sexual roles have changed. How often is the pornography shop a front for anonymous sex and AIDS transmission?

The Public Code of Behavior

The current reaction to abortion clinics, separation of church and state and school busing suggests a trend away from tolerance to one of constricting tradition. As long as consenting adults kept their sexual preferences to themselves, it was considered tolerable, but with drug abuse, florid promiscuity, pornography and AIDS many politicians sensed such practices as an attack on the establishment. In my judgment there will emerge a confining movement around these issues that will find great strength in our traditional institutions.

Many activist homosexual groups attribute the discrimination against them as being inseparable from the society in which they live. Their opposition to the existing social structure and economic system is viewed as the only way to overcome centuries of exclusion. Radical

social changes, they believe, require radical methods to accomplish their ends. With their insistence that sexuality is only one part of human behavior they reject any implication of "sinfulness" in their orientation and refuse to be counted with the pariahs. This promises to be a major victory, but it brings its own problems. Many homosexuals confuse civil rights with mainstream recognition, and yet in society tolerance applies to realistic social issues of controlling AIDS while homosexual equality applies to transcendental values.

Summary

Homosexuality has been the object of discrimination and scorn for centuries through a combination of cultural, religious and governmental practices supported by the leaders of society. A surge of social change erupted in the United States during the 1960s to the 1980s. Homosexual acceptance by the larger society is still debated in government, higher echelons of industry, and military and religious organizations. On the entry level of waiters, clerks, service personnel and students it is acceptable, but not yet in the board rooms of American industry. AIDS, drug abuse, drug addiction, and prostitution now threaten Western society. A resurgence of social discrimination with exaggerated fears of closeness, contagion, contact and exposure threatens the tolerance toward homosexuals so recently achieved.

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REVIEW

CASSELL, ERIC J. *The Healer's Art.* 240 pp. Cambridge, Mass.: The MIT Press, 1985. Price $7.95 (paperback).

Reviewed by ELIHU S. HOWLAND

This is a truly admirable book. The subject is not entirely new, but the book broadens it and gives it a fresh impact. The theme is that medicine is a moral profession whose tools are only in part technical. Gradually the technical side has come to dominate and obscure the moral side to the point where a corrective is needed — not an alternative to technological medicine but a balance to it. The author is well qualified to discuss both sides: he is not only a practicing internist but also a teacher and investigator in public health and preventive medicine.

He reminds us that the form taken by healing in a culture or subculture is intimately related to the central beliefs of that culture, which, while useful, are not necessarily the whole truth. In our medical subculture, because of the gathering explosion of scientific advance the central belief has come to be in diseases — entities characterized by structural, biochemical, or genetic defects that have unique causes and that must be cured by technological means. However, doctors do not treat disease but people with diseases. This involves not only a knowledge of medical technology but also an awareness of matters central to the human condition. (Cassell has a rather appealing term for this: "citizenship for the subjective" as well as for the objective.)

Diseases are numerous and produce many different clinical pictures. But regardless of what their diseases may be, sick people do have certain characteristics and behaviors in common. Sickness results in some degree of being disconnected from one's world and having less control over one's own life. At best this state is mild and temporary, but at worst it may constitute a danger to life in which fear progresses to hopelessness, failure of reason and panic. This larger view of sickness Cassell prefers to call "illness" and not "disease," requiring not simply technological cure of a part, or of one or more systems, but healing directed toward the whole person, which includes dealing with subjective factors that are inherently moral. The many different examples of these throughout the book plainly show that with ad-

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 2 (1986); 121-123.
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vancing technology comes a growing number of ethical questions the doctor cannot escape (just one example: does the doctor ever have the right to let a seriously ill person die, and if so, when?).

Cassell's focus in treatment is on restoring to the patient as much control over his or her life as possible. The doctor-patient relationship is crucial here. It is based on trust. The doctor's responsibility is not only "curing" but also helping the patient find purpose, fulfillment and happiness in living even when he or she is overwhelmed. The doctor must understand the concerns of the patient. Part of the doctor's job is to be a teacher and to explain to the patient briefly and simply the nature of the illness. This removes the illness from the realm of the unknown to that of the understandable, and teaches the patient that there are ways of participating in his or her own care. The "healing connection" (trust and caring) between the two may be enhanced by how the doctor uses his hands when it is necessary to do so, as in the physical examination.

The task of helping sick people find purpose and meaning in existence extends even to those who are dying. The chapter on overcoming the fear of death is, I think, the most remarkable in the book. Technology has failed, and we are thrown back on human inner resources. We are told by most of those who fear death that they are basically afraid of a state of "nothingness," loss of control and helplessness. Abbreviated and oversimplified by me, a physician's approach can be: "There comes a time when it is all right to stop living, and it won't hurt. We will relieve all the pain we can. You have more control over this disease than you realize; it doesn't need to drag you around. We will support you in whatever you decide to do." This change in the management of dying patients (as opposed to "fighting for life, regardless") Cassell found unnatural and uncomfortable at first, but it has become much easier. Now, medical students are amazed by how comfortable and calm many of their patients and their families are. There are some failures; where denial is very strong in a patient, it is not breached and may even be supported. But for many the fear of death subsides because there is something they can do, and death then either becomes a part of living or else no longer pulls at them, as if they had "risen above time" (Cassell's own words).

Altogether, this picture of the doctor's responsibility, though an entirely fair one, is quite awesome. As the author says, he may be seen as omnipotent by some patients who have lost their faith in God, and

be in the awkward position of knowing that he should not see himself as all-powerful and at the same time realize that he should not reject his patient's image so abruptly and completely that he destroys the patient's essential trust in him. It would be tempting to take up the question of when, or even if, moral concerns may become spiritual, but there is not room here to do that. The book does remind me of Viktor Frankl's search for meaning while imprisoned in a Nazi concentration camp.[1]

I recommend this book without reservation to all doctors and to anyone in a field that even touches on medicine.

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[1]Frankl, Viktor E. 1959. *From Death-Camp to Existentialism.* Boston: Beacon Press.

REVIEW

STOECKLE, JOHN D., M.D., AND WHITE, GEORGE ABBOTT. *Plain Pictures of Plain Doctoring: Vernacular Expression in New Deal Medicine and Photography*. 250 pp., illus. with 80 photographs. MIT Press Series on the Humanistic and Social Dimensions of Medicine. Cambridge, Massachusetts and London, England: MIT Press, 1985. Price $19.95.

Reviewed by LOUISE ROSSKAM

This book contains 80 photographs of rural and small-town America, showing medicine being practiced at the grass-roots level during the desperate economic conditions of the '30s Depression. Viewed against the backdrop of today's specialized, technically advanced medical practice, it is a poignant reminder of the physician's dedication in a time of urgent need.

These photographs were gleaned from thousands taken for the Farm Security Administration of the Roosevelt Administration. At that time a file of documentary photographs was amassed by Roy Stryker's stable of talented men and women who were sent out into the field to show, with straightforward, on-the-spot images, the need for the government programs being set up to aid the rural poor. They responded directly and honestly with their cameras to the conditions they saw before them. If the photographs have since become famous for their stark reality and emotional quality, it is because the poverty was appallingly real and the desperation touched the emotions of the viewers. The phrases "documentary photography" and the authors' "vernacular expression" were coined at that time, but these were simply fancy ways to record what was in front of camera lenses. In the words of Ben Shahn, one of the photographers who has since become famous the world over as a painter, "We just took the pictures that cried out to be taken."

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In conjunction with the photographs, the text contains a well-documented review of the background, both historical and political, of the United States during the Great Depression. In this review, the mandate for the production of the FSA photographic file is clearly explained. The section of the book on "Primary Care in the 1930s" is a survey of medical practices of the time with emphasis on the days when home visits and the doctor's "little black bag" were familiar to the impoverished poor. There is no doubt, after reading of the conditions among the people at the time and of the lack of financial remuneration for doctors, that government support for the delivery of medical care was desperately needed. In this light, the shift that began at that time from private funding for medicine to public government funding is examined in terms of the acceleration from the days of the New Deal to the present.

In the chapter on the doctor-patient relationships, plain doctoring is shown in unretouched, unposed straight-on images. Picture after picture depicts the stark simplicity of basic medical examination and treatment offered by doctors in the medical programs of the Farm Security Administration. The pages of photographs are followed by an interesting and in-depth analysis that defines the subtle exchange between doctor, patient and photographer captured by the camera.

Although the authors title their book *Plain Pictures of Plain Doctoring,* a great deal of space in the book is devoted to a discussion of photography as a means of communicating in the "vernacular." This is defined in part by notes found at the end of the book as "something that is common and generally understood by the average person." Also present in the extensive text is a well-documented history of government programs both in medical care and in photography of the time. It would have been effective, however, if some of the thousands of photographs that were made showing the deplorable conditions in the rural areas — starvation, eviction from the land, inadequate housing, and the desperation in the faces of mothers and children — had been placed as a background to the ones showing the program of FSA health care. However, the book is unique in its combination of graphic imagery and scholarly research into the areas of the impact of photography on the understanding of human relationships between the photographer and the photographed.

The photographers represented in *Plain Pictures of Plain Doctoring* are John Collier, Marjory Collins, Jack Delano, Walker Evans, Fenno Jacobs, Dorothea Lange, Russel Lee, Arthur Rothstein, Ben Shahn, John Vachon and Marion Post Wolcott.

John D. Stoeckle, M.D., is Professor of Medicine at Harvard Medical School and Director of the Primary Care Training Program at Massachusetts General Hospital. George Abbott White is Keeper of the Mattheissen Room, Eliot House, Harvard University.

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REVIEW

BARSKY, HANNA K. *Guillaume Dupuytren: A Surgeon in His Place & Time.* 291 pp., illus. New York: Vantage Press, 1984. Price $14.95.

Reviewed by FRANCIS SCHUMANN

The name "Dupuytren" today brings little else to the mind of the medical student than that peculiar contracture of the palmar fascia so completely described by him. But to the nineteenth century surgical world it signified the most renowned, dedicated and scholarly physician in all of France, someone from an impoverished province who had, by virtue of outstanding talent and prodigious work, risen to the very pinnacle of European surgery.

Dupuytren lived from 1777 to 1835, a time of tremendous political change and turmoil, of artistic and musical innovations stimulated by Romanticism and sweeping liberal and humanistic ideas. Medicine and surgery could hardly have remained aloof. During the first half of the nineteenth century French medicine and biologic science took the lead, with names familiar to all of us — Cruveilhier, Laennec, Gay-Lussac, Magendie, Marjolin, Lisfranc, Roux, Larrey, Corvisart, Bichat and many others. During the thirty years of his activity Dupuytren played the central role in the development and teaching of clinical medicine based on basic anatomic, physiological and pathological research. In this account we are led into his consultation room, lecture halls, laboratories and operating suite. We feel the blend of austerity with humanity, his complete devotion to studying, and helping his patients, whether rich or poor, mighty or humble. We feel the huge respect for his teaching and ethics of his large number of interns and students and appreciate the importance of his contributions, which reached far into the future following his early death.

With regard to Dupuytren's nonprofessional tastes and interests the record reveals little. The author has, therefore, used her considerable knowledge of history, art, music, language, literary and philosophic trends to create for the reader a concept of the era that was perhaps for me the high point of the book. Into this society Dupuytren made his way, from poor medical student through various stages to a professorship at the Faculté, to the position of Chief of Surgery at the 1,000-year-old hospital, Hôtel-Dieu, to the Légion d'Honneur, to the orders

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 2 (1986): 127-128.
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of St. Michel and St. Vladimir and a position of personal surgeon to the last of the Bourbon kings of France. Finally, he was given the hereditary title of baron, conferred by Louis XVIII in April 1821. Since he had no male heirs, this title died with him.

Dupuytren's private life was more difficult to portray, but we have a glimpse into the quiet dignity in which he lived, the bitter estrangement from his wife, and the one great joy in his daughter, Adeline, whose successful marriage brought him his greatest happiness, along with his devotion to his work.

Dupuytren's life spanned the French Revolution, the Reign of Terror, the Directory, the Napoleonic era, and finally the restorations of the last of the Bourbons to the throne. He never closely committed himself to any political doctrine but saw to it that all those in need received the best attention he and his colleagues could give. In time of conflict, he tended all sick and wounded, no matter what side they were on, and thus retained the confidence and support of whatever government was in power. In his will, after leaving family and certain individuals a proper legacy, he designated two sums for the School of Medicine—one to establish a chair of Pathologic Anatomy, the other to create a pathologic museum that remains active today.

Here is the story of a great surgeon and the exciting times in which he lived. It is presented in considerable detail and is not to be read lightly. But on finishing the book, the reader will be richly rewarded and can derive greater pleasure in daily study and consultation.

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REVIEW

ARCHER, JOHN, AND LLOYD, BARBARA. *Sex and Gender.* 353 pp. New York: Cambridge University Press, 1985. Price $32.50.

Reviewed by DIANA ELIZABETH LONG

Sex, gender and the relationship between them are important and controversial topics in the intellectual world at the moment. Earlier, their problems were considered the domain of biologists, but more recently the social scientists have offered descriptive and analytical accounts of human sex (biology) and gender (sociology). This textbook is by two social scientists who have written extensively on the subject in the last ten years. As a description of the biological and social differences between the human sexes it is an excellent introduction to current reliable data. Its contents include chapters dealing with physical sex differences (evolution, development and cultural significance); sexuality (psychobiology, psychoanalysis and sociology); and aggression, violence and power as well as considerations of fear, the family, work, intelligence and achievement and the models of male and female development.

The only flaw I could find in the book is Table 6–1. The totals in the column of numbers of men and women admitted to mental hospitals for each illness do not tally exactly. Furthermore, although the text says that a major bias in the data (and the stereotype of female psychological vulnerability) comes from the greater longevity of women, the table nonetheless includes data on senile and presenile diseases. With this caveat I recommend the book to interested readers in all disciplines concerned with sex differences as a reliable and well-written source of information.

In addition, the authors tackle the more difficult question of the causes of the differences between men and women. They present a readable introductory chapter on our cultural stereotypes and their intellectual flaws. Seeking to correct these flaws with better data, Archer and Lloyd tentatively espouse social theories of the causes of differences in sex and gender. That gender, for example, is the social identity that men and women build on the biological reality of their sex, an idea given prominence by the study of John Money and his colleagues. Archer and Lloyd support the liberal (social science) wing

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of this developmental approach to sex/gender by a second theory. They identify themselves with the "intergroup relations" theory of Glynis Breakwell, who believes that individual identity is constructed in relation to the group of which one is a member and that the power of that group is crucial to a person's sense of self. Each woman's identity suffers from membership in a relatively powerless group, and her incentive is great to try to change that situation. The authors accept this view tentatively and clearly subscribe to the general proposition that female oppression is social and can be undone by social change.

This classically liberal approach to the question of the cause of gender inequality is its faith in the power of social science to change the world. Clearly set forth and evenhanded, the book is an excellent introduction to the questions that feminism has raised in the last ten years about political and social dynamics of gender in modern culture. Two aspects of the problem are not adequately addressed in this volume. Archer and Lloyd (fearful like all modern liberals of biological determinism) have underestimated, I think, both the rootedness of the perceptions in our biology and the possibilities for biological change of our gender. In addition, they have overestimated the ability of science (whether physics or psychology) to talk people out of their prejudices. They imply that their book should be a stimulant to action in addressing the inequalities of women and, one might add, of men. Questions of where the language and tools of action are to come from are not addressed.

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John Valentine Blady
1905–1985

ROBERT D. HARWICK

John V. Blady died in his sleep of probable cardiac arrhythmia on November 24, 1985, after one of his usual active and busy days. He was born on December 16, 1905, in Milwaukee, Wisconsin, and received his B.S. degree from the University of Wisconsin. As Wisconsin offered only the first two years of medical school at that time, he was a member of the first graduating class of Duke University Medical School in 1932. As an active alumnus of both medical schools, he interviewed Philadelphia area applicants for many years. After an internship at Duke, he completed residency training in Radiology and Radiation Therapy at Temple University Hospital in 1935 under Dr. W. Edward Chamberlin.

Although for the rest of his medical career his radiologic talents were a great asset in the management of surgical problems, it was his contact with cancer patients in radiation therapy that inspired him to take a Rockefeller Fellowship in Cancer at the Memorial Center for Cancer and Allied Diseases from 1936 to 1939. The training received was that of the total care of a cancer patient with all the modalities available at the time. Selected cases even received Coley's toxins, perhaps the first chemotherapeutic agent, conceived by William Coley. In the early years of Memorial Hospital surgery was initially done for the complications of, and in support of, primary treatment with radiation. As its limitations became evident, surgery in all the specialties became more important and the attending staff became innovators of surgical techniques that rapidly advanced and improved results in the care of the cancer patient. John Blady was fortunate to have his surgical training at Memorial at this time, and he easily acquired the meticulous techniques of his mentors. Of equal importance was the influence of James Ewing, the tumor pathologist and chief of the hospital. The year after John Blady completed his residency, James Ewing retired. Dr. Blady conceived of the idea of a Memorial Alumni Society and in 1940, with four others, formed the James Ewing Society, named after the father of the multidisciplinary approach to the study and treatment of cancer. Yearly meetings were held until 1948 when the format was

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changed to a yearly cancer symposium. That was the year when John Blady was president. About ten years ago, since the society's membership had expanded to include leaders in the field from other institutions, its name was changed to the Society of Surgical Oncology, indicating its broadly based membership devoted to advances in surgical research and treatment.

In July 1939, Dr. Blady returned to Temple University Hospital and, at the request of Dr. Chamberlain, organized the Department of Radiation Therapy. For the first time in Philadelphia, a long-term follow-up program of cancer patients was started. Records, entered in detail, are still a valuable resource. Cancers of the head and neck were of special interest to him, and he soon confined his practice to this area. He organized the Head and Neck Tumor Clinic and gained successive promotion in the Department of Surgery until 1951 when he was made a clinical professor. Over the years he contributed greatly to the evolving surgical treatment of tumors of the head and neck and was one of the first to recognize the need for reconstructive techniques and rehabilitation of these patients. When Hayes Martin and Grant Ward formed the Society of Head and Neck Surgeons in 1954, he was one of a select few to be chosen as a charter member. A leading radiotherapist who had some of his early training with Dr. Blady told me that he was one of the few oncologists he knew who understood the need to integrate all the specialties in the care of cancer.

For many years Dr. Blady was a member of the American Radium Society and was its president in 1971. He was one of five founding members who incorporated the Philadelphia Division and the Pennsylvania Division of the American Cancer Society. He was president of the Philadelphia Division in 1959 and 1960 and put into practice the societies' programs of public and professional education as an active chairman of the Cancer Control Committee of the County Medical Society from 1947 to 1958.

He served on and was chairman of many other committees of the Philadelphia County Medical Society. None of these offices demonstrated his organization, leadership and effectiveness more than his chairmanship of the New Building Committee from 1963 to 1966. Although the need was great, the effort failed for many years until his committee gave the society its present building on Spring Garden Street. He was president of the Philadelphia County Medical Society in 1967 and received its prestigious Strittmatter Award in 1985. Active

as well in state organizations, he was president of the Pennsylvania Medical Society in 1977.

Dr. Blady's awards include a Certificate of Merit for Distinguished Service in Cancer Control given by the British Government in 1972 and the Bronze Medal from the Chapel of the Four Chaplains in 1984.

He was an avid gardener, a stamp and coin collector and a golfer who appreciated every facet of the game and was a delight to have in a foursome. He was president of the Philadelphia Doctors' Golf Association in 1968.

With all his professional and medical society activities, his family was always foremost. He was a devoted husband to his wife, Dee, and a supportive and loving father to his children, John, Kathryn and Mary Frances. No one more than John Blady deserves the accolade, "Well done, thy good and faithful servant."

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Addendum

Sir James Watt has advised the editor that he has come across a description of hypervitaminosis A written nearly 150 years earlier than that cited in his recent article, "Commodore Anson's Circumnavigation (1740–1744): The Bequests of Disaster at Sea," *Transactions & Studies of the College of Physicians of Philadelphia,* Series 5, Volume 7, No. 4 (1985):223–238.

The description occurs in an account of a 1596–1597 Dutch expedition, commanded by Jacob van Heemskerck and piloted by William Barents, that was seeking China by the Northeast Passage. Their ship was beset by ice off Novaya Zemlya, and the entire company spent the winter in a shelter they built on shore. The second mate, Gerrit de Veer, describes the killing of a polar bear in his journal entry for 31 May 1597. He adds:

> but her death did vs more hurt than her life, for after we ript her belly we drest her liuer and eate it, which in the taste liked vs well, but it made vs all sicke, specially three that were exceeding sicke, and we verily thought that we should haue lost them, for all their skins came of from the foote to the head, but yet they recoured again, for the which we gave God heartie thanks.

Gerrit de Veer, *The Third Voyage Northwards to the Kingdomes of Cathaia and China in Anno 1596,* in *The Three Voyages of William Barents to the Arctic Regions,* 2nd ed., Koolemans Beynen and Charles J. Beke, eds. London: Hakluyt Society, 1876, p. 183.

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Items of Interest from Philadelphia Medical Centers

The Children's Hospital of Philadelphia. *Richard B. Johnston, M.D.,* Chairman of the Department of Pediatrics at the University of Pennsylvania School of Medicine, has been named physician-in-chief.

The Gold Medal Award was presented to *Waldo E. Nelson, M.D.,* a professor in the Departments of Pediatrics at Temple University School of Medicine and the Medical College of Pennsylvania.

A multidisciplinary center for pediatric nutrition has been funded by the Howard Heinz Endowment.

Peter H. Berman, M.D., has been elected Chairman of the Section of Neurology of the American Academy of Pediatrics.

The Medical College of Pennsylvania. *Harry Gottlieb, M.D.,* has been given a Founders' Day Award.

Gerald H. Escovitz, M.D., has been named national chairman-elect of the Group on Medical Education of the American Association of Medical Colleges.

The National Advisory Council of the National Health Services Corps has appointed *Richard J. Baron, M.D.,* a member.

D. Walter Cohen, D.D.S., has been elected the eighteenth president of the Medical College of Pennsylvania.

Maurice C. Clifford, M.D., retiring president, was honored at a Tribute Dinner on April 9. Proceeds of the dinner will establish an annual award to that student at MCP who best demonstrates Dr. Clifford's standards of excellence and humanity.

The University of Pennsylvania School of Medicine. *T. A. Ranieri, M.D.,* was recently elected president of the Medical Alumni Society.

At a recent meeting of the Society of Perinatal Obstetricians *Philip Samuels, M.D.,* received the Award for Outstanding Research by a Fellow in Training, and *Jerrold Golding, M.D.,* was elected Vice-President/President-Elect.

A study of adolescent runaways, funded by a grant from the United States Justice Department, has been completed by *Ann W. Burgess, D.N.Sc.*

Peter Randall, M.D., has been installed as first vice president of the American College of Surgeons.

The American Dental Association has appointed *Martin S. Greenberg, D.D.S.,* to its Protocol Committee.

Thomas Jefferson University. A Reproductive Loss Center has been established to give counseling and treatment to couples that have had three or more miscarriages.

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A grant has been received from the estate of Etelka J. Greenfield to help support research fellowships in family medicine.

A series of late afternoon "I Can Cope" classes has been organized for cancer patients and their families.

Samuel S. Conly, Jr., M.D., has been inaugurated as president of the Jefferson Medical College Alumni Association.

Temple University Health Sciences Center. *Bennett Lorber, M.D.,* has been given the 1985 Moses Award for Excellence in Clinical Teaching, and *Helen R. Buckley, Ph.D.,* is the 1985 recipient of the George A. Sowell Award for excellence in teaching.

Sidney Cohen, M.D., has been appointed professor and chairman of the Department of Medicine.

Effective July 1, the acting chairman of the Department of Psychiatry is to be *Charles Chagass, M.D.*

At a Convocation on March 20 the new 504-bed Temple University Hospital was dedicated. It will contain new clinical laboratories, sophisticated imaging facilities, surgical and delivery suites and an emergency department. At the Convocation honorary degrees were conferred, among others, on *Robert C. Gallo, M.D.,* of the National Cancer Institute, and *Katharine B. Sturgis, M.D.,* of Philadelphia.

Hahnemann University. *Gian Carlo Salmoiraghi, M.D.,* has been named chairman of the Department of Physiology.

William S. Frankl, M.D., is to serve as president of the American Heart Association, Pennsylvania Affiliate.

Homer C. Curtis, M.D., has been named president-elect of the American Psychoanalytic Association.

Israel Zwerling, M.D., Ph.D., has been appointed senior vice president for Academic Affairs and dean of the School of Medicine.

Irena Koprowska, M.D., has been given the Hahnemann University Recognition Award for Women in Science and Medicine.

Correction

On page 73 of our March 1986 issue under *Academia* a name was misspelled and the identity of a leading investigator inadvertently omitted. The corrected item reads:

Hahnemann University. Funding has been received in support of The Krancer Center for Inflammatory Bowel Research. The program, designed for the study of ulcerative colitis and Crohn's disease, will be directed by *Harris R. Clearfield, M.D.,* and the associate director of clinical research will be *Vicent Dinoso, M.D.*

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TRANSACTIONS & STUDIES

of

THE COLLEGE OF PHYSICIANS
OF PHILADELPHIA

MEDICINE & HISTORY

Series V Volume VIII N° 3 September 1986

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OF PHILADELPHIA

MEDICINE & HISTORY

Series V Volume VIII Nº 3 September 1986

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ISSN 0010–1087

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Authors should submit two copies, typed on one side of 8½ × 11 inch paper; all material, including quotations and references, should be double-spaced. A short summary of the paper should also be included. *Transactions & Studies* accepts either footnotes or references, but either must be in accordance with the guidelines in *A Manual of Style* (Chicago: University of Chicago Press, 1969), 12th edition. Prospective authors are encouraged to examine back issues of *Transactions & Studies* to familiarize themselves with the format of the journal.

Photographs and other illustrations may be included. Tables must be typewritten on separate sheets; they should be prepared professionally before submission.

Please address any queries concerning the format of *Transactions & Studies* to the Editor.

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Transactions & Studies of the College of Physicians of Philadelphia (ISSN 0010 – 1087) is published four times a year (March, June, September, December) by the College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, PA 19103. Second-class postage paid at Philadelphia, PA 19104. POSTMASTER: Send address changes to *Transactions & Studies of the College of Physicians of Philadelphia*, 19 South 22nd Street, Philadelphia, PA 19103.

Subscription correspondence should be sent to Publications Manager, *Transactions & Studies,* The College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, PA 19103. Subscriptions, U.S.A. and Canada $30.00, foreign $34.00. Single copies $9.00.

Transactions & Studies of the College of Physicians of Philadelphia is indexed in *Biological Abstracts, Chemical Abstracts,* and *Index Medicus.*

TRANSACTIONS & STUDIES
OF THE
COLLEGE OF PHYSICIANS OF PHILADELPHIA

Series V Volume VIII Number 3 September 1986

MEDICINE AND HISTORY

Report of the President
ROBERT S. PRESSMAN 139

Philadelphia and the White Plague
J. WOODROW SAVACOOL 147

William Edmonds Horner (1793–1853), America's First Clinical Investigator
DAVID Y. COOPER 183

REVIEWS

AUSTRIAN, ROBERT, *Life with the Pneumococcus*
Reviewed by Stanley A. Plotkin 201

SACKS, OLIVER, *The Man Who Mistook His Wife for a Hat and Other Clinical Tales*
Reviewed by Marian K. Appel 203

SZKLO, MOYSES et al., editors. *Epidemiological Reviews, Volume 7*
Reviewed by Paul D. Stolley 206

TAYLOR, ROBERT, *Saranac, America's Magic Mountain*
Reviewed by John L. McClenahan 208

Academia 210

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Acknowledgments

The publication of *Transactions & Studies of the College of Physicians of Philadelphia* is made possible through the generosity of:

The M. Louise Carpenter Gloeckner Memorial Fund
The Morris Feld Memorial Fund
The Benjamin and Mary Siddons Measey Foundation

Report of the President

ROBERT S. PRESSMAN

Whatever has been accomplished during my two year tenure has come from the assistance of many people, particularly our Council and its officers, whose support and advice were of immeasurable value. Many of the past presidents were a continuing source of strength; they are probably the College's most valuable resource. I need not mention them by name; they all contributed. The staff of the College as well, under the direction of Mr. William Chaveas, was always diligent in attending to the tasks set before them.

The Bicentennial Celebration

The highlight of the past two years has been our intensive planning for the yearlong Bicentennial celebration in 1987. During the term of office of my predecessor, Dr. Brooke Roberts, a Bicentennial Planning Committee was appointed on the initiative of the Planning and Development Committee. It consisted of Drs. Lewis Bluemle, Jonathan Rhoads and Brooke Roberts. It held many meetings with myself as President and Dr. Lewis Coriell as President–Elect sitting in ex-officio. When plans were considered for the numerous lectures that will be given before and during the Bicentennial year Dr. George Spaeth sat with us as Chairman of the Scientific Affairs Committee. Starting with the September 1986 College Night, there will be a series of outstanding lectures continuing for a year and culminating with a two day symposium on November 20 and 21, 1987. We hope to have a celebrated national figure as our speaker at a banquet on the evening of November 20. The final lecture of the Bicentennial year, entitled "Quo Vadis?" will be delivered by the renowned physician and author, Dr. Lewis Thomas.

Fund Raising

In 1982 Mr. William L. Grala, Vice-President for Public Affairs for SmithKline Beckman, generously consented to become Chairman of the New Century Fund Campaign Committee. He has been an invaluable help. He arranged for the Kepner Tregoe Organization to assist the College in strategic planning. He also arranged for Funderburke Associates to do a feasibility study to determine how much the College

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 3 (1986); 139-146.
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might obtain in a fund-raising campaign. It was his view that we should adopt an 8 million dollar objective. To this end Mr. Funderburke has continued to give us counsel on the intricacies of fund raising. We then set a series of fund priorities designed to include every segment of the College, half of the 8 million dollars to be earmarked for the Library with lesser amounts to other departments. Thus, the New Century Fund came into being. An overall Steering Committee was appointed with Mr. Grala as Chairman, aided by Drs. Mark Allam, Robert Bradley, Lewis Coriell, Robert Pressman, Jonathan Rhoads and Daniel Shaw. The major subcommittees were: Corporate Gifts, Daniel Shaw, Chairman; Foundation Gifts, Mark Allam, Chairman; Major Individual Gifts, Robert Bradley, Chairman. Supplementing these is a Fellowship Campaign with a chairman at each of the forty-four hospitals in the Delaware Valley whose staffs include a significant number of Fellows. Each of these leaders has recruited additional solicitors with the mission of persuading Fellows to become substantial contributors. Their devotion to the College is noteworthy. As their chairman I cannot sing their praise too loudly.

Associate Fellows

Another outstanding accomplishment has been the reactivation of the Associate Fellowship category of membership. These Fellows have been drawn from the alumni of various medical schools, starting with Jefferson University where Dr. Lewis Bluemle, as President, not only provided an alumni list but also put his signature on a letter addressed to these candidates. So far this campaign has been successful; more than 200 Associate Fellows have joined the College. Recently a letter to Temple alumni has been producing similar results. It is contemplated that letters will go out to alumni of the Medical College of Pennsylvania, cosigned by Dr. Alton Sutnick, and to those of Hahnemann University, cosigned by Dr. Bertram Browne.

Other Committees

As our Fellows grow older they tend occasionally to drift away from the College. I have attempted to reverse this trend by creating a Senior Advisors Committee, so that we can from time to time seek out our older Fellows for advice, and a Visiting Committee, to assist Fellows and their families at a time of illness and/or death. We are fortunate in having Dr. John McClenahan as Chairman of these committees.

The College depends on its committee structure for smooth and efficient operation. Those worthy of mention are: the Budget and Finance Committee, chaired by Dr. Daniel Shaw and ably assisted in managing our finances and portfolio by Drs. Arthur Dannenberg and Henry Tumen; the Committee on Fellowship, chaired by Dr. Joseph Wagner, which is responsible for an orderly flow of the new Fellows in the College and which has finished this year with Fellowship at the highest figure ever recorded; and the Library Committee, chaired by Dr. Peter Koblenzer who is assiduous in maintaining its preeminent status. Our Lay Board of Advisors, chaired by Mr. John R. Park, continues to give us invaluable advice on our relationship with the community at large.

Many other committees contribute materially to the effective running of the College. These, chairman in parentheses, are: By-laws and Ordinances (Palmer H. Futcher), Continuing Education (Edward J. Stemmler), Publications (Robert Austrian), Wood Institute (Stewart Wolf), Hall & Grounds (Norman Makous), Public Health & Preventive Medicine (Paul D. Stolley) and the Women's Committee (Mrs. Robert S. Pressman).

The Censors and Elective Counsellors continue their efforts in behalf of the College.

In 1887, commemorating our Centennial Celebration, Dr. W. S. W. Ruschenberger published "An Account of the Institution and Progress of the College of Physicians of Philadelphia During a Hundred Years from January, 1787." It seemed appropriate to follow this with a book celebrating our 200-year history. We were fortunate in enlisting the services of Dr. Whitfield Bell, Jr., past Executive Director of the American Philosophical Society and one of Philadelphia's most distinguished scholars, to undertake this task. It is our hope that his volume will be finished by the end of 1987.

On November 7, 1984, a splendid event took place marking the 75th anniversary of the dedication of the present College Hall on 22nd Street. During the afternoon there were a series of presentations, the bright spot of which was a description by the eminent architect Vincent Kling of how the building was constructed. In the evening a lively birthday party was held in Mitchell Hall. What was unique about this event was a reproduction of the same menu that was served at the dinner at the Bellevue-Stratford Hotel on November 10, 1909. The only difference was the inclusion of spouses at our dinner. Such

events in 1909 were restricted to the masculine gender, there then being no female Fellows.

Dr. Lewis Coriell, prior to becoming President-Elect, was Chairman of the Mütter Museum Committee and, as will be mentioned, was instrumental in obtaining a grant to restore the Museum. This meant shutting down the museum during 1985–86 while complete rebuilding took place. Dr. Robert Bradley, current Chairman of the Museum Committee, has been extremely helpful in supervising these arrangements and is preparing a gala celebration and Halloween party on the occasion of the reopening.

The Library

The Director of our Library is Anthony R. Aguirre. He has submitted a two-year "Summary of Highlights," which, unfortunately, is too lengthy to include here. However, some of the more noteworthy items will be of interest to readers.

As you are probably aware, our library contains more than 20,000 rare books and 423 incunabula. It seemed in order to appoint a Rare Book subcommittee of the Library Committee, particularly after we have learned that the Swedenborgian Church next door is for sale and could conceivably be converted to a Rare Book facility. The idea is ambitious and, although negotiations are under way, it would be imprudent at this time to discuss it further since the property is being eagerly sought by others.

The Library is entering the computer age. Integration of library activities through the use of micro-computers and other electronic means is nearing completion. Future plans call for linking all the computers into a network.

A collection development policy has been adopted to guide the Library's future acquisitions. Oversight of its policy will be maintained by the Library Committee.

The one hundred most used journal files have been moved from the Periodicals Room to display shelves in the Reading Room. As a result, reader space in the Packard-Krumbhaar alcove has been increased and library staff has been efficiently employed.

The College subscribes to more than 2,100 journals and in addition receives another 200 – 300 journals in exchange. These are now automated on an IBM-PC based system that keeps track of missing and late issues.

The Interlibrary Loans Department continues to maintain the best record in the region for requests filled on the day of receipt — 94 percent. They fill the greatest number of requests of any health sciences library in the Northeast.

In May 1985 the Library started to participate in the National Library of Medicine's computerized interlibrary loan request and referral system, DOCLINE.

During the summer of 1985 a shift in stack space was accomplished, but even so we are rapidly running out of available space. If our plans for establishing a Rare Book Facility come to fruition, space will become available, but, if not, we will have to go ahead and add at least two or three more floors to our present stacks.

The Historical Collection Department has since February 1985 been headed by Mr. Thomas Horrocks, who brings youth and new vitality to our priceless rare book collection. He has afforded our Fellows an opportunity to purchase duplicates, freeing up enough money to reenter the rare book and manuscript market for the first time in years, and has renewed Walton B. McDaniel's "Fugitive Leaves from the Historical Collections" after a nineteen-year hiatus.

Medical Documentation Service

The Medical Documentation Service, under the expert guidance of June Fulton, has continued to prosper and grow. The total number of clients has increased from thirty-two to fifty-three. There has been an increase in the number of articles processed by the staff from 23,820 in 1984 to 43,049 in 1986. Translations have been provided in twenty-two European and Asian languages.

To do this the department has reorganized into four sectors — Administrative, Scientific Service, Document Delivery/Reference and Data Processing. The past three years have witnessed reorganization and growth to such an extent that M. D. S. is running out of space.

The Francis C. Wood Institute

The Francis C. Wood Institute for the History of Medicine, with its Director Diana Long, Ph.D., is fulfilling its mandate "to explore contemporary institutions in historical perspective." In November 1984 it sponsored a national conference on the history of the American Hospital. A monograph containing papers presented at the conference is being published by Cornell University Press. In March 1986 it

hosted "Grand Rounds, 100 Years of Internal Medicine," in honor of Francis C. Wood, the proceedings of which are to be published by the University of Pennsylvania Press. There are plans for a third conference on the History of the Concept of Disease.

In 1985 the Wood Institute was designated one of the fourteen Rockefeller Foundation Humanities Sites in the United States and was awarded $156,000 by the foundation to bring two full-time fellows to the Institute for each of three years.

As mentioned earlier, there are many plans afoot to celebrate the reopening of the Mütter Museum in the fall of 1987. In the meantime, its Curator, Ms. Gretchen Worden, is busy making plans for the myriad exhibits to be assigned new space.

Transactions & Studies

Transactions & Studies continues under the chief editorship of Dr. John McClenahan. Despite a reduced staff, it keeps the Fellowship informed about presentations at the College, Memoirs of deceased fellows and reports of historical interest.

Office of the Executive Director

I think you are all aware that our Executive Director, William F. Chaveas, will be retiring at the end of January 1987. A Search Committee has recommended that John M. O'Donnell, Ph.D., be appointed his successor and the motion has been approved by Council.

Mr. Chaveas has provided leadership and guidance in the Museum Renovation Project, the New Century Fund Campaign and the Medical Documentation Service. He took an active role as well in the Kepner Tregoe Strategy Formulation Session and has supervised the Continuing Education Programs. He has assumed heavy responsibility in our Annual Giving Program and in fund raising from foundations and other sources, submitting 170 proposals for a variety of purposes. Grants totaling $186,000 were obtained in 1984–85.

Personnel administration and data processing have been improved, a terminal installed in the Executive Office for word processing, membership files management, events scheduling and support for the New Century Fund Campaign.

In addition to other duties, Mr. Chaveas expanded the office of College Functions, with Ms. Lillian Walters as coordinator. Their ef-

forts have provided much needed income and have increased the visibility of the College.

Herb Towell, in charge of maintenance, has kept our premises in first-class shape. When there are functions, day or night, weekends or during the week (there were 200 in 1984–85) he and his crew stayed behind after all the guests departed, cleaning up and restoring our quarters. In addition, he supervised multiple renovations—on the first floor the Ladies' Room, conversion of Thomson Hall to a combination meeting/dining room, and dismantling of the ceiling in the museum. In the basement, he salvaged additional room for M. D. S. from part of the lunch room and a rearrangement of other areas. On the third floor he converted an apartment kitchen into a nonsmoking dining area, created a new storage area after removing the skylight and renovated three offices.

During the past year smoking has been outlawed in all public areas, in keeping with our concepts of preventive medicine.

I would be remiss if I didn't mention a very important feature of the College — its Sections, Academies and Societies. These may be tightly bound to the College, such as the Sections, which require action by Council to become formally recognized, or they may be academies or societies with an independent status but accustomed to meet more or less regularly in the halls of the College.

The Sections were created by Council in 1891, and two have been continuously active since then, the Section on Ophthalmology (the first Section to be created) and the Section on Otolaryngology.

Annual reports were received from six of the eight Sections: Dermatology, Geriatrics and Gerontology, Insurance Medicine, Medical History, Ophthalmology and Otolaryngology. Contributions to the College and the New Century Fund have been received from the Sections on Insurance Medicine, Otolaryngology and the History of Medicine. They continue to be active, with frequent meetings, and several have membership lists of 100 or more. It is possible for any group of fifteen Fellows to petition Council and establish a Section.

Recent Events

Two significant events took place in the past two years for which I can take no credit, but that are of great importance. A grant of $100,000 was generously forthcoming from the Commonwealth of Pennsylvania through the efforts of Dr. Mark Allam and, on the initiative of

Dr. Lewis Coriell, we were given a grant of $460,000 by the J. N. Pew, Jr., Charitable Trust for the renovation of the Mütter Museum.

The Council has committed us to an important new venture in the creation of a Health Policy Center. Its first efforts will be to explore what effect the pressure of cost containment is having on the quality of medical care. It is under the direction of a committee of practicing physicians and academicians chaired by Drs. Paul Stolley and George R. Fisher. We are attempting to raise $150,000 as initial seed money for the project, but we will need more before we are finished.

One problem that was finally solved a year ago was that of our 21st Street properties. Over the years the College had acquired three buildings adjacent to the College-owned parking lot on the corner of 21st and Ludlow Street. Repeated efforts were made to preserve these dilapidated buildings, but no financially feasible solution could be found. With great reluctance, we agreed to their demolition, and it is a sad commentary that the necessary financial return from these properties is being realized from their conversion to a parking lot. In these times of deficit budgeting such income has been urgently required in attempts to balance our budget.

Finally, I have tried with all diligence to make all Fellows more conscious of the College. What we need is a heightened awareness of the College, of its interest in all its Fellows and, it is hoped, a reciprocal devotion to the Society and its magnificent building. The College has been in existence for almost 200 years; here's to the next 200!

19 South 22nd Street
Philadelphia, PA 19103

Philadelphia and the White Plague

J. WOODROW SAVACOOL

From colonial times tuberculosis was recognized as a major health problem in Philadelphia — but, as was the case elsewhere, it was regarded with resignation and apathy. Benjamin Rush[1] joined the large majority who regarded it as hereditary, although at one point he admitted that he had once adopted the opinion of contagion. He agreed with his mentor, William Cullen of Edinburgh, that tubercles were the effects of consumption rather than the cause and that hemoptysis was a cause of tubercles. He advised bleeding, purging and a diet of weak broth plus protection from cold air, measures he credited with the cure of his own "predisposition" to pulmonary consumption between his eighteenth and forty-third years.

Early History

There was little written about tuberculosis early in the nineteenth century in Philadelphia, and most writings reflected European opinions. Robley Dunglison in 1835 commented on an extensive review of phthisis published in London by James Clarke. In 1837 Dr. William W. Gerhard of the Pennsylvania Hospital reviewed a book by Samuel G. Morton[2] of Philadelphia relative to treatment, especially climatic. Morton, a student of Laennec, had been trained in the new procedure of auscultation. His book described symptoms and signs of pleural disease and other manifestations of phthisis.

Forbes's* translation of the classic work by Laennec[3] was slow in influencing physical diagnosis in England and America, but Gerhard[4] in 1850 described percussion and auscultation at length in the diagnosis of "pulmonary phthisis." He also described softening of tubercles to form ulceration and stated that tubercles do not always ulcerate and progress but may, on the contrary, be absorbed. Nathaniel Chapman[5] denied a possible cure for phthisis pulmonalis, denied Laennec's unified view of tubercles, phthisis and scrofula and denied "contagion" of phthisis. Little change in these views is perceptible

* John Forbes, M.D., F.R.S., physician to Chichester Infirmary and physician to H.R.H. the Duke of Cambridge.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 3 (1986): 147-182.
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during the next thirty years (1850–80), although case reports of various tuberculous processes were frequent and Austin Flint's book[6] in 1856 reflected generally held attitudes and described physical signs in detail. He stated that the "prospect of exerting a control over the disease and diminishing its tendency to a fatal issue is in proportion to its early recognition." Further progress awaited Koch's discovery of the tubercle bacillus in 1882, but the effects of this discovery were not immediately manifested.

In 1861 Oliver Wendell Holmes employed the term "The White Plague" in calling attention to the devastating prevalence of tuberculosis in civilized society. This designation contributed to efforts to increase public awareness of a disease that, in retrospect, had been regarded with complacency both medically and socially. Although many able physicians had given their best efforts to identify the problem and to describe the disease, no substantial progress had resulted until basic discoveries were made in the nineteenth century. These included the work of Laennec in pathology and physical diagnosis, of Villemin in demonstrating the inoculability of tuberculous material, of Brehmer and Dettweiler[7,8] in beginning the sanatorium movement, and the final triumph of Koch's discovery[9] of the organism ultimately to be designated *Mycobacterium tuberculosis.*[9] These advances were in turn dependent on the evolution of histology, the application of aniline dyes to tissue and organism description and acceptance of the idea that living organisms can produce disease. The White Plague had dominated the causes of impaired health and death for many years, ignorance often having appeared to foster complacency.

In the nineteenth century consumption was regarded with a sense of romance in a number of circles, especially owing to the experiences of many famous people who were victims of the disease and to frequent references to it in literature. A purely scientific approach was obviously not feasible in view of the state of science. Philadelphia, as well as other American medical centers, was not yet established in medical investigation, the initiative having developed in European centers. This is apparent not only in the area of laboratory research but also in attitudes toward burgeoning knowledge of disease. Reluctance to change in thinking and teaching was clear as one studies tuberculosis. It is probably appropriate, therefore, that the earliest rumblings of concern about tuberculosis as a public issue came from nonmedical sources.

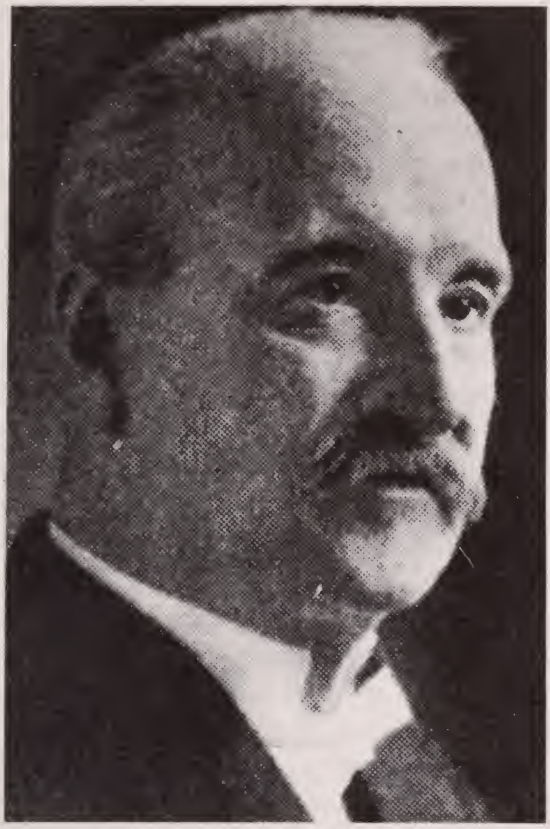

Figure 1. William H. Hutt, M.D. (1847–1917). The first physician to care for "poor consumptives" through the agencies of the Protestant Episcopal City Mission (1872) and the Southwark Dispensary (1873). (Courtesy of the American Lung Association)

Lay Intervention

In 1870 the Philadelphia Protestant Episcopal Church organized its City Mission intended for local "missionary and charitable work" among the poor. Very soon the church recognized the link between poverty and disease, and in 1882 a dispensary was established under City Mission auspices.* In 1873 a board of trustees from area Episcopal churches opened a dispensary at 1017 Morris Street, and soon the major concern focused on consumption. Dr. William H. Hutt *(Fig. 1)* was placed in charge and later claimed to have begun the first work with consumptives in America that same year. In a paper prepared for the 7th International Congress on Tuberculosis he claimed to have

*Annual reports of the Philadelphia Protestant Episcopal City Mission (1873–95). In addition, a comprehensive report (1885) of the Home for Consumptives by the Mission Superintendent, the Reverend Samuel Durborow, is useful. Mrs. Norma Harburger is Archivist.

been responsible for innovative programs for the care of poor consumptives. It is difficult to document the events of the early 1870s, but Hutt's claim of priority in environmental and dietary measures are unsupported by contemporary publications, and several of his retrospective statements are clearly in error when compared with church records and recorded medical data. It is apparent, however, that he did perceive the seriousness of consumption as a problem among the poor. For several years he carried out measures for relief before the church initiated more aggressive efforts.

On February 21, 1876, a report of a church committee to study the need for a Home for Consumptives was heard by the bishop and the Board of Council for City Missions of the Episcopal Church and plans for such a facility evolved. The Reverend Samuel Durborow, Superintendent of the City Mission, went to Boston and to the New York Episcopal City Mission. He corresponded with the Royal National Hospital at Ventnor, Isle of Wight, which was one of five hospitals for consumptives established in England, the first in 1813 and the one in Ventnor in 1868. Also in 1876, Mr. and Mrs. Harry Ingersoll donated a large house at 411 Spruce Street to the City Mission. It became the House of Mercy and served for many years as Mission Headquarters. Soon a few rooms in the upper floors were adapted for use of female consumptive patients. The Reverend Heaton was appointed "to visit and report upon the cases applying to the City Mission for assistance as consumptives." Dr. George Kobler was appointed Attending Physician at the House of Mercy in 1878. By 1879 seventeen other physicians were donating their services. Sick-diet kitchens, ultimately five in number, were opened in 1875 to assist the poor, especially consumptives.

Although public attention was not yet focused on the needs of tuberculous patients and there was little evidence of professional medical activity in the process, the Annual Reports of the City Mission for 1878 indicate that contributions to the "Consumptive Fund" had grown a great deal. The same report, moreover, includes a "commendation of eminent physicians" sent to the Reverend Durborow lauding his charity and advising people to contribute. The physicians included Drs. Samuel W. Gross, Ellerslie Wallace, James Tyson, Joseph Klapp and William Pepper. The House of Mercy continued to house female consumptives, and a few other buildings were temporarily used; one at 111 Queen Street was opened for male consumptives in September

1880 but closed in 1882 owing to "discipline problems." In 1880 a major bequest of $190,000 was received from the estate of Miss Mary Shields for erection of a home for consumptives. Soon thereafter, a certain Isaiah Williamson left a valuable house in Southwest Philadelphia to be used for support of poor consumptives. In 1883 Major Moses Veale,* taking cognizance of developing knowledge of tuberculosis and reacting to Koch's discovery of the tubercle bacillus, recommended that consumption be placed on the list of "contagious diseases." This was just prior to his appointment as Executive Officer of the Board of Health of Philadelphia. Change in attitudes was in progress, but it would prove to be discouragingly slow.

A major step forward for the Episcopal City Mission occurred in 1884 when Mr. William Bucknell, Esq., deeded eleven acres in Chestnut Hill to "erect a Home for Consumptives irrespective of creed, color or nationality." Construction soon began, and the first buildings were ready for opening on May 3, 1886. Only female patients were accepted until 1907 when males who were cared for at 411 Spruce Street were also accepted in Chestnut Hill. For some years emphasis was on domiciliary care as compared with hospital care, both chronic and incurable patients being admitted as facilities permitted. Dr. Wm. Muir Angney was resident physician at 411 Spruce Street and Dr. Robert Bolling at Chestnut Hill. The same year (1886) Dr. Frederick P. Henry and Dr. James C. Wilson were listed as Consultants and Drs. Jacob M. DaCosta, Jacob Solis-Cohen, James H. Hutchinson and E. M. Watson as Visiting Physicians. As early as 1887 the Superintendent received a letter from "a physician" suggesting that a hospital for diseases of the chest be established in a more central part of the city while maintaining Chestnut Hill as a home. Although not identified it is likely that this physician may have been Dr. Lawrence Flick, to whom we'll come in a moment.

Meanwhile, the staff physicians were not content simply to care for the needs of dying people. Many doctors were committed to drugs and procedures that were believed to be helpful in the treatment of consumption, and those at Chestnut Hill were no exception. Baths,

* Major Moses Veale, a Civil War hero, became executive officer of the Philadelphia Board of Health in 1884. Though not a physician, he supported anti-tuberculosis measures very early and was a founding member of the Pennsylvania Tuberculosis Society.

ointments, oral medications, gas and air inhalations and even gas enemas were all tried. Dr. Angney in 1887 stated that he was employing gaseous enemata "which promised so much" at the House of Mercy, but the following year he reported that they were "very disappointing." Dr. Jacob Solis-Cohen, having been joined on the Staff by his brother, Solomon Solis-Cohen, was employing pneumotherapeutic treatment with a special apparatus for inhalation of rarefied and compressed gas.[10] Compressed air was thought to be as good as oxygen. However, oxygen was helpful for acute cyanosis while "nitrogen monoxide and oxygen mixture helped cough and insomnia." Later, when tuberculin therapy came into being with its promotion by Koch himself, Dr. Angney expressed skepticism and indicated that the experience of Dr. Solis-Cohen at Chestnut Hill was unfavorable.

In 1898 The Home for Consumptives became known as the Hospital for Diseases of the Lungs and later as All Saints Hospital. In 1908 a training school for nurses was established. In 1920 Dr. Richard Ellison established a department of heliotherapy, converting Lucas Cottage for its purposes and cooperating with the Philadelphia Health Council and Tuberculosis Committee to study its use in the treatment of bone tuberculosis, a problem principally involving children. This effort continued through 1944 when Lucas Cottage was closed. All Saints continued in the treatment of tuberculosis through 1965, contributing services latterly to the care of city and Veterans Administration patients in addition to regular referrals. The role of the church in developing a concern for people with tuberculosis is an honored one and surely contributed to the growing concept of public involvement in disease control and therapy.

Lawrence Flick, M.D.

The early history of tuberculosis in Philadelphia is dominated by one man, Dr. Lawrence F. Flick (*Fig. 2*). He was born in 1856 and was graduated from Jefferson Medical College in 1879 after his own first encounter with tuberculosis. He became ill again soon after an internship at Philadelphia General Hospital and credited his subsequent improvement to fresh air, rest, simple diet, milk and eggs. He began to promote this regimen aggressively soon after opening his office in 1883. Even prior to Koch's discovery he had become interested in the infectiousness of tuberculosis during his student years at Jefferson through the influence of Dr. William H. Webb. Dr. Webb was a very

Figure 2. Lawrence F. Flick, M.D. (1856 – 1938). Pioneer and crusader in public health efforts against tuberculosis. Founder of the White Haven Sanatorium and the Henry Phipps Institute. (Courtesy of the American Lung Association)

strong proponent of the "theory of contagion" and published a comprehensive article about it in 1878.[11]

Flick pursued many avenues for the relief of patients from the beginning, declaring the probability of arrest when the prevailing opinion favored incurability. He soon appreciated his helplessness as an individual to do more than cite the problem and began efforts to increase public understanding of it and to elicit medical support. In company with others, he found many Philadelphia physicians reluctant to change their attitudes. Although the news of Koch's discovery of the tubercle bacillus had been received with enthusiasm in progressive circles, it proved rather difficult to persuade the medical community of Philadelphia that the organism was the cause of tuberculosis and that its discovery provided the key to its control. Dr. James T. Whitaker of Cincinnati[12] demonstrated the procedure for identifying the organ-

ism in sputum in 1882 before the College of Physicians of Philadelphia, but few physicians were persuaded and brisk arguments regarding infectiousness continued for more than a decade with well-known doctors dissenting. Partly because of the difficulty in interesting his colleagues in the problem of consumption, Flick took his case to the public, with signal results. He learned early the uses of publicity in propagating his views and later in fund raising and volunteer recruitment.

Flick was elected to the College of Physicians of Philadelphia in 1888 soon after Fussell had reported 100 cases of tuberculosis to the Philadelphia County Medical Society, emphasizing the importance of demonstrating tubercle bacilli in the sputum for diagnosis. At the same meeting William Osler said, "I think that the importance of the tubercle bacillus in the sputum as a means of diagnosis is not sufficiently recognized by the profession." Shortly before this Dr. William H. Webb[13] demonstrated that tubercle bacilli could be found in the air in certain locations and, with Drs. Osler and James C. Wilson, supported Flick's efforts to declare the disease communicable and reportable. Drs. William Pepper and Jacob M. DaCosta dissented. An important statistical study reported to the College by Mays in 1887[14] declared the importance of tuberculosis as a public problem and a cause of death.

Professional Dissent

This controversy was to go on for some years, and several heated discussions took place at the College. S. Weir Mitchell, Owen J. Wister and Solomon Solis-Cohen led the opposition to tuberculosis registration. To be sure, their motives varied, including fear that stigmatization of the patients could be counterproductive, and yet reluctance to accept change must have been a major factor. Although Herman M. Biggs in New York successfully promoted registration in 1893, Philadelphia did not accept it until 1904. An interesting sidelight to the issue is a letter of apology from Mitchell to Flick in 1910 after he and others were convinced of the need for public health involvement.

During these years, although the etiologic role of the tubercle bacillus was accepted, heredity and the phthisical diathesis of tuberculosis attracted great interest. In his 1892 textbook, Osler[15] stated, "Tuberculosis unquestionably may be inherited, but in what way and how often are unsettled problems." The diathesis concept was inter-

preted by many as a hereditary factor, but the role of other bacteria was much discussed at that time. Flick believed that streptococci and staphylococci played a major contributing part in this process and that softening and necrosis of tubercles resulted mainly from the presence of these organisms. As late as the 1930s McFedran in Philadelphia was pursuing this line of investigation, including the use of bacterial vaccines for the treatment of tuberculosis.

Flick then turned his attention to the care and treatment of consumptives. He presented a paper to the College of Physicians in 1890[16] in which he suggested the establishment of special hospitals for tuberculosis that would develop active treatment in contrast to homes for the care of patients with advanced disease. Establishment of the Rush Hospital was an early result of this movement. Its charter was granted on September 16, 1890, a dispensary opened at 22nd and Pine Streets on June 4, 1891, and patients were admitted on January 28, 1892. In 1899 a new building was provided, and in 1904 an up-to-date hospital was built at 33rd Street and Lancaster Avenue. Dr. Flick was active on the staff for only a short time. He resigned because the staff was controlled by "non-contagionists" with whom he could not agree. Rush Hospital was supplemented by a country branch purchased in 1902 in Willistown Township, Chester County. Its purpose was to serve as a "preventorium" for children, usually on transfer from the City Branch.

Resource Organization

Support for Dr. Flick at this time included Dr. Samuel Gibson Dixon, who became involved in 1888 and conducted studies on bovine tubercle bacilli in London. He was also a lawyer, later a professor of hygiene at the University of Pennsylvania and still later President of the Academy of Natural Sciences. In 1905, when he became the first Commissioner of Health of Pennsylvania, his concerns about tuberculosis contributed greatly to efforts for its control. Drs. Judson Daland, Edward O. Shakespeare and James C. Wilson, the latter Professor of Medicine at Jefferson Medical College, all proved very helpful, forming the nucleus for The Pennsylvania Society for the Prevention of Tuberculosis.[17] At a meeting of lay and medical people at Flick's office on April 22, 1892, the group was organized and quickly began efforts to prevent and isolate active cases, to educate the public and, before long, to raise funds for the achievement of these objectives.

Although England and Scotland had some philanthropic programs to this end, this drive was among the first to join medical and lay persons for a major public health campaign. It soon led to the formation of local and state groups elsewhere in the United States and attracted the attention of interested persons abroad.

White Haven

In addition to his early efforts at tuberculosis control, Flick also devoted himself to the direct care of sick people. Taking note of the needs of poor consumptives, he established an organization to provide them with free beds. The Free Hospital for Poor Consumptives began to collect funds in 1895 for the purpose.* These were used at first to supply beds for tuberculous patients in general hospitals that would accept them, but in 1901 the hospital made a bold move. Noting the momentum toward sanitorium treatment generated in Europe and at Saranac Lake, Flick and his supporters established the Free Hospital for Poor Consumptives and the Sanatorium at White Haven, Pennsylvania. Staffed mainly by Philadelphia physicians, this facility played a significant role in the city's program of tuberculosis therapy. Beginning in a barn and respecting current opinions of the value of climate, elevation, soil moisture and fresh air, White Haven quickly assumed leadership in the state's sanatorium movement. This was followed by construction of sanatoriums with public funds as these were permitted by the State appropriations and by "homes for the tuberculous," often located close to the sanatoriums and staffed by the visiting physicians of those institutions. The early White Haven staff included Drs. Joseph Walsh, Ward Brinton, Wm. B. Stanton and A. J. Cohen. White Haven evolved through numerous phases as the tuberculosis situation changed, but the pioneer purposes and work of the founding physicians proved solid and lasting. In 1946 it was taken over by Jefferson Medical College before being ultimately sold to the State of Pennsylvania for other purposes. Noted physicians who served there included Frank A. Craig, H. R. M. Landis, Charles J. Hatfield, Burgess Gordon, Martin J. Sokoloff, D. J. McCarthy, Charles H. Miner, Elmer H. Funk and Charles A. Heiken. From its inception the sanatorium observed principles of rest, limited exercise and simplicity of diet that were in vogue at the

* Father Scully and the League of the Sacred Heart of old St. Joseph's Roman Catholic Church led this effort.

time. Milk, which was purchased in bulk and processed, and eggs, which were largely produced on its own farm, provided the basis of the diet. Dr. Flick continued as president of White Haven until his retirement in 1935.[18]

The fruits of Flick's early efforts were clearly perceptible at the turn of the century both to medical and lay people, and new sources of support developed rapidly. In an address at Yale University in 1900 Dr. J. M. DaCosta supported the concept of infectiousness of tuberculosis and the need for public action to control it. Dr. Ward Brinton and Dr. Solomon Solis-Cohen became involved in a movement to improve working conditions, especially in industries with a high incidence of tuberculosis. Dr. Howard S. Anders campaigned against public spitting and uncontrolled dust. Mr. C. M. Lea, whose early concerns involved him with the Trudeau Sanatorium in 1882, was very supportive and, as a member of the Pennsylvania Tuberculosis Society, helped in many ways. Flick published a number of tracts for public information and Lea assisted him, tactfully softening Flick's direct, belligerent style. Through the efforts of such pioneers as these, special hospitals were established to treat tuberculosis and provide beds for the consumptive poor.

At that time there was relatively little initiative shown by Philadelphians to investigate the tubercle bacillus or its chemistry and immunology, projects that were being pursued in Germany, France and other parts of Europe. American physicians made efforts to obtain tuberculin from Berlin for treatment very early,* but unfavorable results diminished interest in such an approach. The Philadelphia group was singularly unimpressed with tuberculin for treatment, and its role in diagnosis awaited the work of von Pirquet in the first two decades of the twentieth century. In spite of the lack of research, in 1901 the Pennsylvania State Legislature appropriated $40,000 for buildings and equipment at White Haven. Francis J. Torrance, president of the state Board of Charities, arranged for a meeting between Flick and Henry Phipps (*Fig. 3*), a Pittsburgh steel magnate and a partner of Andrew Carnegie. This led to an immediate grant for White Haven from Phipps, and soon to much more. He decided to fund a new facility for a major

* In 1890 Dr. Robert Koch prepared an extract from tubercle bacilli (tuberculin), which he promoted for therapeutic purposes with much publicity. It ultimately proved useless for treatment.

Figure 3. Mr. Henry Phipps (1893 – 1930), Pittsburgh industrialist and benefactor of the Institute bearing his name. (Courtesy of the American Lung Association)

attack on tuberculosis. He and Flick made a tour of Europe in 1902 to inspect clinics and research facilities. They visited Paris, London, Berlin and Calmette's Institute at Lille, the latter to serve as a model for Flick's developing plan to found an institute for the study of tuberculosis. Phipps immediately authorized funds for the program.

The Phipps Institute

The Henry Phipps Institute was launched on January 9, 1903, when Dr. Flick met a group of reporters and announced his plans. There was considerable publicity in major newspapers and medical journals and a great deal of editorial comment. On February 2 of that year the Institute opened in a rented building at 238 Pine Street (*Fig. 4*). Associated festivities included a series of lectures delivered by Dr.

Figure 4. 236 – 238 Pine Street, site of the Phipps Institute from 1903 to 1913 and of the Department for Diseases of the Chest, Jefferson Medical College Hospital, 1913–1946.

Edward L. Trudeau, Dr. William Osler, Dr. G. Sims Woodhead of Cambridge, England, Dr. Herman M. Biggs of New York City, and Dr. Edwardo Marigliano* of Italy. At the end of the meeting the assembled group founded the National Tuberculosis Society.

Patients were admitted to the Institute almost at once. Soon inpatients and dispensary patients were being cared for while the building was being adapted to its new uses. The adjoining house at 236 Pine Street was later added. Three wards were opened on April 20, and the forty beds were filled in one week. Four departments were organized: Hospital, Dispensary, Laboratory and Educational. Autopsies were regularly performed and the results carefully analyzed by the staff. Associated with Flick was a group of remarkably able young cofounders: Drs. Joseph Walsh, Charles J. Hatfield and Daniel B. McCarthy. They were joined by Drs. M. P. Ravenel, H. R. M. Landis and E. J. G. Beardsley. These and others[19] would distinguish themselves in Philadelphia medicine (*Fig. 5*).

* This paper was read in absentia.

Phipps Staff of 1908

Back row, *left to right:* J. W. Busch, S. Rhoads, I. Kaufman. **Third row,** *left to right:* W. Brinton, H. J. Off, J. M. Cruice, C. M. Montgomery, E. J. G. Beardsley, G. Fetterolf, E. Burvill-Holmes. **Second row,** *left to right:* W. T. Cummins, H. L. Bates, J. D. Blackwood, F. A. Craig, J. T. Ullom, H. Carncross, A. J. Cohen, M. K. Meyers. **Front row,** *left to right:* W. B. Stanton, J. Walsh, C. J. Hatfield, L. F. Flick, J. McFarland, H. R. M. Landis, D. J. McCarthy.

Figure 5. Staff of the Phipps Institute, 1908, a remarkably able group of physicians assembled by Flick. Many went on to distinguished careers.

Fear

The care of tuberculosis posed some unanticipated problems. Along with increased public awareness of the needs of consumptives, a fear of these people as a source of infection quickly escalated into a phobia. Patients experienced prejudice socially and in employment. At the same time nurses were reluctant to expose themselves to tuberculous patients — this, in spite of favorable experiences in England both in London's Brompton Hospital and the Royal National Hospital for Con-

sumptives at Ventnor, Isle of Wight, where it had been shown that the incidence of tuberculosis among attendants of tuberculous patients was surprisingly low. Flick proposed to meet this problem by establishing schools for nurses both at Phipps in 1904 and at White Haven in 1907. Thus, a supply of dedicated nurses could be provided while, at the same time, assuring a future for young women who had recovered from tuberculosis. Training ultimately included two years at the tuberculosis facility, supplemented by one year in a general hospital for affiliation and eventual certification as an R.N.

The Institute showed steady progress. A laboratory was opened and Dr. Mazyck P. Ravenel placed in charge. Research was encouraged by all staff members, the laboratory serving as a focal point for data sharing. Regular staff conferences with compulsory attendance provided a unifying force. Patients admitted to the hospital were usually quite ill with far advanced disease, and the mortality rate was high. Individuals with less advanced tuberculosis could be admitted to White Haven Sanatorium, where Phipps staff members were usually visiting physicians. During the early years, X-ray examinations were available, but little reliance was placed on them. Social and educational material was presented to dispensary patients; Dr. Landis was especially involved in this program. Classes were formed for patients and their families; homes were visited. The curriculum included elementary sanitation and methods of providing fresh air, including tents, sleeping porches or window tents and proper diet. Poor patients could obtain up to two quarts of milk daily.

Progress

The Institute rapidly assumed an important place in Philadelphia medicine and achieved national recognition. About the time of its opening, plans were under way for attracting the International Congress on Tuberculosis and they required a sponsoring organization. For several years competing groups had tried to form a national organization but had failed. In 1904 an agreement was finally reached and by then, as has been noted, The National Tuberculosis Association had been formed in Philadelphia at the opening of the Phipps Institute.[20] It was reinforced in Atlantic City in 1905. That same year, in Paris, Flick issued an invitation for the 1908 Congress to be held in Washington, D.C. It was accepted and its success assured when President Theodore Roosevelt agreed to act as President of the Congress. One

of the effects of the Congress was the traveling exhibit that followed it, 500,000 people having seen it in Philadelphia alone.

At the Phipps Institute it was early perceived that, together with a building program, an affiliation with a major teaching center would be desirable. In discussions Flick favored Jefferson Medical College, but Mr. Phipps had come under the influence of Osler and Welch at Johns Hopkins and the result was a proposed affiliation with the University of Pennsylvania. Phipps made an offer to the University in 1909 and asked that Flick be offered the directorship. After long consideration, Flick ultimately declined for reasons not openly stated and resigned in 1910, perhaps because of veiled hostility toward him on the part of University of Pennsylvania physicians. Dr. Esmond Long later stated that "Dr. Flick resigned in a conflict of strong personalities."

A new building was completed and occupied on May 1, 1913, and the new medical director, Dr. Charles J. Hatfield, proved an able administrator. The Institute prospered and H. R. M. Landis, a contender for the directorship, went on to become a nationally known clinician and author. A sufferer from tuberculosis that never really came under total control and that eventually cost him his life, he was renowned in physical and clinical diagnosis and a dominating influence in his field in Philadelphia. He and Dr. George W. Norris eventually authored the standard textbook, *Diseases of the Chest and Principles of Clinical Diagnosis* (1917), an authoritative reference for many years. Dr. Ravenel investigated the bacteriology of tuberculosis, especially the relationship of bovine to human tuberculosis, at the time a controversial problem, especially since Koch himself denied such a relationship. He advanced to important teaching posts and for sixteen years was editor of *The American Journal of Public Health.*

Research

Within the next two decades important research contributions issued from the Phipps Institute. The names of Opie, McFedran, Aronson, Lurie and later Long and Seibert are associated with distinguished investigative accomplishments. Eventually, inpatient treatment was abandoned with emphasis continuing on dispensary care, radiology, education and bacteriology. A number of agencies referred patients to Phipps, and its clinics were very busy maintaining pneumothorax, pursuing radiology both clinically and for investigation, and teaching medical students, graduate students and nurses. Its reputation was

firmly established as a leading center for tuberculosis management.[21]

In 1932 two new and stimulating presences were felt at the Phipps Institute: Dr. Esmond R. Long, director of laboratories, and Dr. Florence R. Seibert. Long had contracted tuberculosis in his early years and was never totally free from its stigma. He had to his credit significant discoveries in the pathology of the disease and in the chemistry of the tubercle bacillus. The active principle of tuberculin had been of major interest to both Long and Seibert. This research was stimulated soon after their arrival in Philadelphia by its identification as Purified Protein Derivative, which ultimately became the standard for diagnosis of tuberculin sensitivity by skin testing. Criteria for the standardization of P.P.D. were developed and approved by the World Health Organization in 1952 based on the Seibert active principle.

Dr. Long succeeded as medical director on Hatfield's retirement and was in turn succeeded by Dr. Julius Wilson in 1955. The Phipps Institute was ultimately absorbed into the laboratories of the University of Pennsylvania.

Other events in the saga of tuberculosis crowded in at the turn of the century. Flick's successes, which were described by Price as "almost single-handed," were apparent in social, legislative, hospital and medical circles. The environmental aspects of tuberculosis control were widely publicized. In 1902 Dr. Howard S. Anders, president of the Pennsylvania Tuberculosis Society, proved himself an able advocate of state involvement for treatment and control. In 1903 the state legislature appropriated $8,000 for support of a state "sanitory camp" for consumptives on the forestry reserve at Mont Alto, Pennsylvania (*Fig. 6*). This camp as it was first constituted was just that; its facilities were limited to "shelter, firewood and drinking water." However, it opened the way for the organization of a state program, which was greatly advanced in 1905 with the appointment of Dr. Samuel G. Dixon, whom we have already noted, as the first Commissioner of Health of Pennsylvania. At the time there was not even an office for the Department of Health, and until the capitol building was completed in Harrisburg, he operated out of his office at the Academy of Natural Sciences in Philadelphia. Soon statewide clinics and sanatoriums were forthcoming.

In 1905, as part of the state clinic program just being instituted, Dr. Alfred Stengel was placed in charge of the first State Dispensary for Tuberculosis in Philadelphia.[22] Located at 12 South 17th Street, it was

Figure 6. First shacks at Mont Alto, the first Pennsylvania State Sanatorium at the South Mountain Reserve (1902). Facilities were limited to shelter, firewood and drinking water.

staffed by Drs. Albert Francine, George W. Norris, Ralph S. Levenson, S. L. Turner, and Eldridge Eliason. The dispensary provided nursing and visiting care, dietary management and referral to South Mountain Sanatorium. Patients too ill for either service were referred to the tuberculosis wards of Philadelphia General Hospital, where a Department of Tuberculosis had been opened in 1904. The first staff there was headed by Dr. Flick and included Drs. Joseph Walsh, Wm. Stanton, H. R. M. Landis and Howard S. Anders, soon to be joined by Ward Brinton, A. C. Morgan, Charles J. Hatfield and Albert Francine among others. Under their direction, the service expanded rapidly. The state clinics continued into the third decade of the twentieth century, when they were superseded by the clinic program of the Philadelphia Health Department. Although politics figured in the operations of these clinics, their basic purposes were largely fulfilled as instruments for isolating active tuberculosis cases and later for maintaining pneumothorax treatment centers for outpatients. The entire program, unfortunately, was slow in evolving since public responsibility was accepted only gradually in replacing or supplementing the early charitable and religious efforts.

An International Congress

Perhaps the climax of Flick's contributions to tuberculosis control was the Sixth International Congress of Tuberculosis in 1908. The initiatives, already mentioned, were successful, but a great deal of work was needed to carry them out. Although helped by government personnel and the new officers of the National Tuberculosis Association, Flick assumed major responsibility as chairman of the Committee on Arrangements, with Walsh as secretary. Many famous people, notably European specialists, attended, and the event was carried off with dignity and enthusiasm.

Following the Congress, a number of foreign guests, including Koch, stopped in Philadelphia where gala receptions were held. From this time forward the dominance of Flick in the field of tuberculosis waned, but he had built well. His influence remained strong; and he continued to practice at his office and to function as President of the White Haven Sanatorium until his retirement.

We should not ignore a number of his collateral contributions, such as the organization of the Eagleville Sanatorium and the founding of the Department for Diseases of the Chest at Jefferson Medical College Hospital in 1913. Dr. A. J. Cohen had joined the staff of White Haven in 1907 and, recognizing the need for a tuberculosis facility for Jewish people of Philadelphia, was the leading spirit in planning for Eagleville, chartered on March 24, 1909, as "Philadelphia Jewish Sanatorium for Consumptives." It offered all services with no restrictions on admissions. In 1928 the Loucheim Building was erected at 1332 Fitzwater Street to function as Eagleville City headquarters, a dispensary and follow-up service for discharged patients. In 1919 when the Phipps Institute was no longer able to finance inpatient care at 7th and Lombard Streets, Eagleville leased its wards and operated them for a time, an arrangement that was soon discontinued. Ultimately the sanatorium expanded its surgical and allied facilities and admitted to its staff Dr. Louis Cohen, Dr. Robert Cohen, Dr. J. J. Kirshner and Dr. George Willauer. The institution also undertook a case-finding program in conjunction with the Pennsylvania Tuberculosis and Health Society, employing mobile X-ray units.

The Jefferson Program

The course of Jefferson's Department of Chest Diseases followed

several initiatives. While Dr. James C. Wilson was still Professor and Chairman of the Department of Medicine, there was apparently a perception of a need for specialized treatment of tuberculosis and training in its care. In 1911 the yearly report for the hospital included a comment that a dispensary for tuberculosis was organized "several years ago" but that "a facility for the care of seriously ill patients and for teaching should be acquired."* Dr. Wilson retired in 1911, and in 1912 Dr. Thomas McCrae arrived from Johns Hopkins to succeed him. As the new Phipps Institute building was ready for occupancy in 1913, at Dr. Flick's suggestion Jefferson acquired the 236-238 Pine Street building for its own tuberculosis program. The trustees and faculty quickly set in motion appropriate plans. He further proposed that his "Free Hospital for Poor Consumptives," which still had some resources in addition to the White Haven Sanatorium, share the cost of operation with Jefferson. The plan was adopted promptly, the buildings were renovated and occupied early in March 1914. McCrae appointed his able young associate, Dr. Elmer H. Funk, as medical director of the new division, which was designated the "Jefferson Medical College Hospital, Department for Diseases of the Chest." This was the last in a long series of Flick's outstanding accomplishments. It is interesting to note that he was unable to honor his commitment for patient support beyond March 1915 because of lack of funds and that, while he acted in an advisory capacity, he did not at any time have an academic appointment.

The Chest Department, which became known as "Little Jeff" or more frequently as "Pine Street," soon achieved a notable place in the Philadelphia tuberculosis control program. Dr. Funk planned clinical facilities with inpatient and outpatient programs but emphasized the social aspects of tuberculosis treatment and control. The Social Service Department was particularly respected for ministering to the various ethnic groups for whom tuberculosis was a major hazard. Funk also developed a laboratory in conjunction with the Jefferson Clinical Laboratories and a teaching program for Jefferson students who rotated through "Pine Street" for instruction in physical diagnosis. The staff was soon augmented by physicians from the Departments of Medicine, Otolaryngology and Radiology. In 1917 bronchoscopy came

* Yearly reports of the Jefferson Hospital and the minutes of its Board of Trustees deal with these events from 1911 through 1914.

under the supervision of Dr. Robert M. Lukens, one of Chevalier Jackson's early associates and one of the first to apply the technique to patients with tuberculosis and suppurative bronchopulmonary disorders. Several staff members at Pine Street were also appointed as visiting physicians at White Haven, where patients were frequently sent for chronic care.

In the 1920s the staff at Pine Street was augmented by Drs. Arthur R. Vaughn, Charles S. Aitken and Martin J. Sokoloff. In 1926 Dr. Funk, having achieved a respected place academically, wished to be relieved as Director and was succeeded by Dr. Burgess Gordon, recently of Peter Bent Brigham Hospital in Boston.

New initiatives, including surgical facilities, were developed during the 1930s. As artificial pneumothorax was more frequently used during the 1920s and 1930s, patients could be further encouraged by their freedom to be discharged and return to the outpatient clinic for refills. The nursing department was also adapted to the needs of tuberculous patients and deserves great credit, not only at Jefferson but at countless other institutions, for its attentive service. At this time many nurses and physicians contracted tuberculosis, a circumstance that often shaped and directed their careers.

Just prior to World War II, Jefferson's program benefited from improvements in surgical procedures and understanding of case selection. Drs. Howard Bradshaw and George Willauer joined the surgical staff and Drs. Robert Charr, Peter A. Theodos and Jacob J. Kirshner the medical staffs. During the war Dr. M. J. Sokoloff became acting director; he succeeded Dr. Gordon in 1951. In 1946 the hospital's chest division was moved to Broad and Fitzwater Streets, where enlarged facilities included ninety beds and a pulmonary function laboratory. Dr. Hurley R. Motley, later a renowned pulmonary physiologist, took charge of the laboratory, and a research program in anthracosilicosis and tuberculosis was organized for anthracite miners in cooperation with the United Mine Workers Union. The same year Jefferson assumed ownership and control of White Haven Sanatorium. As the need for tuberculosis facilities diminished with improved drug treatment, White Haven was ultimately closed in 1956, and in 1961 the Chest Division was moved to Jefferson's main hospital center.

Other Facilities

Other Philadelphia institutions first functioned mainly as "homes"

where conventional nonspecific programs prevailed prior to the advent of active treatment. They included Dermady Sanatorium (1904–25), founded in Mt. Airy by Flick and his associates but, prior to its opening, moving to Malvern because of neighborhood fears of a "tuberculosis home." At WaWa Sanatorium Dr. J. W. Cutler later would operate a full service hospital, including surgery. The Burge Tuberculosis Clinics represented, in a sense, satellites of the local clinics of the Philadelphia Health Department's Section on Tuberculosis Control. Dr. Frank Walton Burge became dissatisfied with city policies and in 1940 opened his own clinics at St. Luke's Hospital and Doctors' Hospital with funds raised by the public. At this time there was still a waiting list for patients to enter sanatoriums, and Burge became a vocal advocate of outpatient pneumoperitoneum treatment, a form of therapy developed in conjunction with phrenic nerve operations during the 1930s. As the incidence of tuberculosis declined, the enthusiasm for the Burge programs diminished and the clinics ultimately closed.

Once tuberculosis was accepted as a public responsibility, there was a continuing effort to provide beds for all patients afflicted with it. In 1904 the total number of beds in Philadelphia, public and private, was under 400. These were soon to be supplemented by beds provided by the state. Philadelphia General Hospital opened its Department for Tuberculosis with a new building in 1904 adding 174 beds. As time went on and the need continued, the number of beds eventually reached 400, stabilizing in the late 1940s. Even then there was a waiting list, which was not finally eliminated until 1954, following the advent of chemotherapy.

Philadelphia General Hospital also provided a 25-bed infirmary for doctors and nurses, where many professional people taken ill during their course of training or practice were cared for by such respected clinicians as Dr. David A. Cooper, a recognized authority on diseases of the chest and one who dominated his field from 1930 to 1955. In addition to his appointments at Philadelphia General Hospital, the Hospital of the University of Pennsylvania, and Pennsylvania Hospital, he served for a time as Chief of the Section of Tuberculosis Control in the Philadelphia Department of Health and in 1952–53 as President of the American Thoracic Society.

As late as 1949, Philadelphia General Hospital was still having problems with insufficient appropriations and too few beds for tuberculous

patients. The following year the service was reorganized as the Department of Chronic Diseases of the Chest, with Dr. William Weiss as its administrative chief, and the Department was upgraded as a service and teaching facility. Dr. Weiss and Dr. Katharine Boucot delivered weekly lectures to the house staff.

A State Sanatorium

About this time efforts to consolidate treatment for Philadelphia patients led to formation of the Philadelphia State Tuberculosis Sanatorium with the hope that this would improve patient services and cooperation as an alternative to sending them far from home for long-term care at Mont Alto, Hamburg or Cresson. The importance of climate and altitude, previously assumed, was no longer accepted as modern treatment evolved. With the prospect of relocating Lankenau Hospital from 21st Street and Corinthian Avenue to Overbrook, the state made arrangements to convert the former site to a new sanatorium. In September 1952 a temporary ward was located in the Mary Drexel Building and forty patients were accommodated. In December 1953 the old, partially renovated hospital building was ready for occupancy and the beds were soon filled. It became known as the Henry Landis Sanatorium, and in 1962 a new well-equipped building was dedicated. Dr. Arthur R. Gaines served as Medical Director, and consultants from local teaching hospitals were recruited. Drs. John Y. Templeton III and John McKeown were placed in charge of the surgical service. The opening of the sanatorium ironically coincided with the release of isoniazid in February 1952, which, coupled with streptomycin and aminosalicylic acid, improved tuberculosis treatment dramatically and ultimately led to control of the disease. When the Landis Sanatorium closed in 1973, the need for tuberculosis beds had declined so much that most patients could then be treated with drugs after only the briefest hospitalization.

The Kensington Dispensary holds an honored place in the history of Philadelphia public health. Many poor people, including recent immigrants, lived in the Kensington mill district. Late in the nineteenth century its high incidence of tuberculosis was recognized by leaders in the Lutheran Church, especially in 1895 when the Reverend F. T. Bender, pastor of St. Michael's Lutheran Church, and his wife died of tuberculosis. People became convinced that available services to

control tuberculosis were "woefully inadequate," and a dedicated deaconess, Sister Marie Roeck, who knew of the work of Flick, arranged to visit him with Dr. William Eisenhardt, a Kensington physician. They were given encouragement and on March 29, 1906, the Kensington Dispensary for the Treatment of Tuberculosis was opened at Trenton and Susquehanna Avenues. Pastor August Fischer of St. Michael's was very helpful, and the enterprise got off to a good start with subscriptions from many Lutherans of the area. In 1908 the dispensary acquired larger quarters at Hancock Street and Susquehanna Avenue. Although the effort was predominantly Lutheran in its support and operation, at no time was it an official facility of the regional church, although Lutheran deaconesses were active in administration. Sister Marie Roeck was in charge from 1906 to 1939 when she retired. Management was under control of a Ladies' Board of Managers and a number of auxiliaries.

Treatment at first was limited to dispensary care of the poor. At one time inpatient services were considered, but these did not materialize. Home care, visiting nurses and nutritional services were added and free milk was provided. The Dispensary was probably the only free-standing facility for tuberculosis treatment in Philadelphia that was not affiliated with others and that throughout its history limited itself to outpatient care. Its medical services were provided almost, if not entirely, by volunteer physicians. As early as 1908, Dr. J. W. Irwin, the Medical Director and Physician in Chief, was assisted by fifteen associates and several special consultants. The innovative leadership of the dispensary was recognized by the award of a Silver Medal at the International Congress on Tuberculosis in Washington, D.C., "for the exhibit of a dispensary for the treatment of the tuberculous poor."

In 1910 the founders made another forward step by considering the needs of the children of tuberculous patients. A farm was purchased at Mont Clare, Pennsylvania, where the Rivercrest Preventorium was established. This institution conformed to the pattern of the time and performed for local children functions comparable to the Pennsylvania State Preventorium at Mont Alto. Rivercrest was opened as a summer retreat in 1913 and soon thereafter as a year-round residential facility. Approximately 250 children were cared for annually. Following World War II, the need for such services subsided rapidly, and the tuberculosis service was terminated in 1955. A surviving institution is Ken-Crest Centers, where children with other types of needs and disabil-

ities continue to be helped.*

In 1924 the Philadelphia Department of Health developed local clinics for tuberculosis, ultimately ten in number. These expanded the work of the state clinics and until the early 1970s functioned as specialized clinics under the Section of Tuberculosis Control. Later free drugs were supplied to all clinic patients at state and city expense. Administratively, there was a chief of the section,† in addition to several regional consultants and local clinicians. The clinics were served by excellent nursing personnel, early under supervision of the Control Section but later directed by the Section of Public Health Nursing, aided by social service consultants. For management of recalcitrant and uncooperative patients, epidemiologists were available for home visiting. Case finding, family service, diagnosis and disposition of active cases, study of contacts for epidemiologic purposes, laboratory services and pneumothorax treatment were included. Free sputum examinations were done for persons at risk. Although a waiting list for sanatorium and hospital beds continued into the 1950s, patients most urgently in need of treatment could usually be placed, using temporary private facilities when necessary.

Roentgenology

In Philadelphia the application of roentgen rays to diseases of the chest began almost with their discovery, although there is little evidence that local physicians evinced any special interest or skill in the X-ray diagnosis of tuberculosis. As in other cities, X rays were used principally in bone diagnosis and X-ray therapy. However, as early as 1897 Dr. Charles Lester Leonard, of Philadelphia General Hospital and the Pepper Laboratory of Clinical Medicine of the University of Pennsylvania, read before the 48th annual meeting of the American Medical Association a report[23] describing the use of the fluoroscope and skiagraphs (radiographs) in the diagnosis of aneurysm, cardiac dilatation and empyema, and he mentioned a case in which tubercu-

* Data regarding the Kensington Dispensary were obtained from Dr. Wartluft, Librarian, Philadelphia Lutheran Theological Seminary, and Dr. Herman Roether, Director of Development, Ken-Crest Centers.

† Dr. Martin J. Sokoloff served as Chief from 1942 to 1958 when Dr. Samuel C. Stein succeeded him.

losis entered the differential diagnosis of mediastinal enlargement. Prevailing attitudes towards X-ray diagnosis may be surmised by the reaction to a paper on tuberculosis that same year by Dr. Francis H. Williams of Boston, following which Dr. F. S. Shattuck, in discussion, remarked, "Frank Williams has just shown you some plates and tells you that the heart is here and the lung is here. Now, I can't see a thing in these plates and to be truthful, I don't think he can." Trudeau, however, recognized roentgenology's value as early as 1898. Dr. George Pfahler described the early work at Philadelphia General Hospital and the founding of the Philadelphia Roentgen Ray Society in 1905. The latter event proved stimulating for tuberculosis diagnosis after a symposium by its members on "The Diagnosis of Tuberculosis" at the Philadelphia County Medical Society on January 7, 1907. In August 1909 Albert P. Francine, in a paper presented to the 16th International Medical Congress in Budapest, stated that "the value of roentgenography in the study of pulmonary tuberculosis as supplementary to physical examination is so generally recognized as to need no exposition." The evidence for general acceptance of a large role for X rays in this context by Philadelphia physicians is, however, still meager. In 1916 the Roentgen Ray Society held a joint meeting with the Philadelphia County Medical Society on the subject, "Clinical and Roentgenological Diagnosis of Pulmonary Tuberculosis." Guest speakers, Dunham of Cincinnati, Heise of Saranac Lake and H. R. M. Landis, participated. For a number of years the superior value of X rays in the diagnosis of tuberculosis was still denied by many physicians; even up to World War II, there were those who refused to concede the superiority of radiography over physical examination in early pulmonary tuberculosis — this in spite of an early demonstration reported in abstract from a meeting in Paris in 1898 that tuberculosis could be diagnosed by X ray where physical signs were negative, and confirmed the same year by Williams. Valuable contributions were made by Pfahler, Pancoast and Leonard in the early years,[24] but roentgen diagnosis was profoundly stimulated in 1930 when Dr. W. Edward Chamberlain came from Stanford to the Temple University School of Medicine and when photofluorography for early detection was encouraged by Dr. Esmond Long during World War II.

Katharine Boucot

An important development in case finding took place in 1945 when

Figure 7. Katharine R. Boucot Sturgis, M.D. (1903–). A leader in tuberculosis case finding through mass X-ray surveys, later a distinguished professor, editor and president of the Philadelphia County Medical Society and the College of Physicians of Philadelphia.

a city ordinance was passed requiring annual chest X rays for food handlers, barbers and beauticians. A survey station for photofluorograms was opened eventually (1946) at 111 North Juniper Street and later free survey X rays were available for all persons referred by physicians. The Philadelphia Tuberculosis Society had taken over the photofluorography program, the first in the U.S.A., which had been started by the federal government. In 1944 the Society brought Dr. Katharine R. Boucot (*Fig. 7*) from Detroit to take over the city's survey program. Dr. Boucot, a former patient at Trudeau Sanatorium, lent dedication, enthusiasm and rapidly acquired skill that proved effective in modifying tuberculosis control from the treatment of advanced cases to the detection of early ones prior to their becoming a source of infection. It was not unusual for her to meet physicians who would not believe that their patients could show evidence of tuberculosis by

X ray in the absence of symptoms and/or physical signs. In such instances she patiently and graciously educated them and by her diplomacy contributed greatly to the campaign against tuberculosis. Partly as a result of her success, Dr. Boucot went on to further achievements, in 1952 becoming Chairman and Professor of Preventive Medicine at Women's Medical College, where she served with distinction until 1968. She was also Editor-in-Chief of the *A.M.A. Archives of Environmental Health* from 1960 to 1971 and later President of the Philadelphia County Medical Society and the College of Physicians of Philadelphia. Her pioneer program ultimately ran its course, to be succeeded by tuberculin testing when the incidence of tuberculosis had diminished dramatically.

Surgery

The role of surgery developed very slowly. Collapse therapy had its origin in Europe as early as 1820 (Carson), but it was the work of Forlanini in 1882 that directed attention to artificial pneumothorax as a method of lung relaxation.[8] It was seldom employed, however, until radiography was available for monitoring the degree and character of such collapse. In the absence of adhesions to the parietal pleura it was early noted that the diseased portions of a lung showed "selective collapse," an event that was highly desirable in control of the disease and one that often resulted quickly in disappearance of bacilli from the sputum. Artificial pneumothorax was, however, of limited value in advanced cases or in the presence of well-organized adhesions. Collapse therapy was on the whole slow to be accepted in Philadelphia up to 1920, by which time it was in fairly general, though limited, use elsewhere. Dr. Esmond Long reported that as an unofficial resident assisting Dr. Edward R. Baldwin at Saranac Lake, he gave pneumothorax refills under fluoroscopy as early as 1918.[21]

Although open pneumonolysis had been performed tentatively and with a high rate of complications, the technique of intrapleural pneumonolysis (Jacobaeus)[25] was being developed and signaled a major advance in the feasibility of therapeutic pneumothorax. By severing adhesions with thoracoscopy and cautery, collapse of the diseased portion of the lung could be improved and continued. Jacobaeus had actually begun work with the technique in 1913, but in 1923 when he presented a Mütter lecture at the College of Physicians of Philadelphia he described only fifty cases. Dr. John B. Flick, in the Mary

Scott Newbold lecture at the College in 1934,[26] also referred to the procedure, which by that time had become well established. Though few Philadelphia surgeons became skilled in the technique, Dr. J. W. Cutler devised an operating thoracosope that achieved some degree of general acceptance.

Other surgical approaches, too, were slow in evolving, and there is little evidence of innovation by Philadelphia surgeons. Thoracoplasty was first conceived and tried by De Cerenville of Lausanne in 1885, again by Brauer, and at the turn of the century by Friedrich, but surgical shock was severe and little progress was made. In 1909 Sauerbruch began his work in Marburg with a successful paravertebral thoracoplasty. This led to efforts elsewhere, and in 1911 Wilms of Heidelberg demonstrated the value of rib resection limited to the paravertebral region.[27] Dr. Robert G. LeConte performed a "thoracoplasty" at the Pennsylvania Hospital in 1911 for a patient referred from the Phipps Institute by Dr. Frank A. Craig. It was technically not an adequate operation, but the patient survived, whereas one from Saranac Lake, operated on by Archibald in Montreal about the same time, did not. It was soon apparent that mediastinal shift, compromising ventilation, was a major problem, ultimately to be dealt with by apicolysis and tailoring of stages to an individual's requirement.

The earliest written work on the surgery of tuberculosis had Philadelphia associations. It was written by Dr. John Alexander, a 1916 graduate of the School of Medicine of the University of Pennsylvania and Professor of Surgery at the University of Michigan in Ann Arbor. The book, *Surgery of Pulmonary Tuberculosis*[28] (1925), is inscribed: "In compliance with the will of Samuel D. Gross, M.D. (1805–1884), announcement is hereby made on the title page that this monograph has been awarded the 1925 Quinquennial Samuel D. Gross Prize by the Philadelphia Academy of Surgery." Here, Alexander stated that "only about 300 cases of pulmonary tuberculosis have been operated on in the U.S. during the past seven years." In a later book published in 1937,[29] he noted a major increase in the use of collapse therapy in the twelve-year period.

At about this time Dr. John Flick was developing skills and was perhaps the most active Philadelphia surgeon in the use of thoracoplasty. Dr. George P. Mueller, at the Hospital of the University of Pennsylvania, was a pioneer in general thoracic surgery and was President of the American Association for Thoracic Surgery in 1933. In

1936 he was appointed Professor of Surgery at Jefferson Medical College.

The Tuberculosis Service at Philadelphia General Hospital profited from these relationships that obtained prior to and during World War II and, in point of numbers, accounted for more surgical procedures there than in any other Philadelphia institution. After the Second World War, Dr. Julian Johnson,* professor at the School of Medicine of the University of Pennsylvania, and Dr. Charles P. Bailey at Hahnemann Medical College supervised the surgical arrangements of the tuberculosis service as it was reorganized. It took time before the effectiveness of drug therapy was appreciated; so at first tuberculosis cavities were still treated surgically after preparation with anti-tuberculosis drugs. Soon resection began to replace thoracoplasty when it was noted that the diseased portion of a lung could be safely removed and the deformity of thoracoplasty avoided by pneumonectomy, lobectomy or segmental resection. At Philadelphia General Hospital, Johnson and his associates in medicine and bronchoscopy explored these measures with success until anti-tuberculous drugs and early diagnosis virtually eliminated the need for surgery.

Christmas Seals

The Christmas Seal sale, which for almost a century was identified with public anti-tuberculosis programs, had its beginning in Wilmington, Delaware, but the greatest early stimulus for this fund-raising program was provided by a Philadelphia newspaper. Miss Emily P. Bissell (*Fig. 8*) of Wilmington was described as the "heroine" of the campaign, which she initiated in December 1907 to "save" the Brandywine "shack," occupied by eight indigent Wilmington patients. Facing failure of her stamp sale, Miss Bissell, a dedicated activist, visited Leigh Mitchell Hodges, whose column (The Optimist) ran in the *Philadelphia North American,* and he quickly took up her cause.†

* Dr. Johnson recently recalled his experiences with tuberculosis surgery at Philadelphia General Hospital with satisfaction but added that he was never quite comfortable with thoracoplasty as a definitive procedure.

† E. A. Van Valkenburg, Editor-in-Chief of the *Philadelphia North American,* upon hearing of the project from Hodges, assigned him to it full time for one week with all necessary space. "Tell Miss Bissell that the *North American* is hers for the holidays."

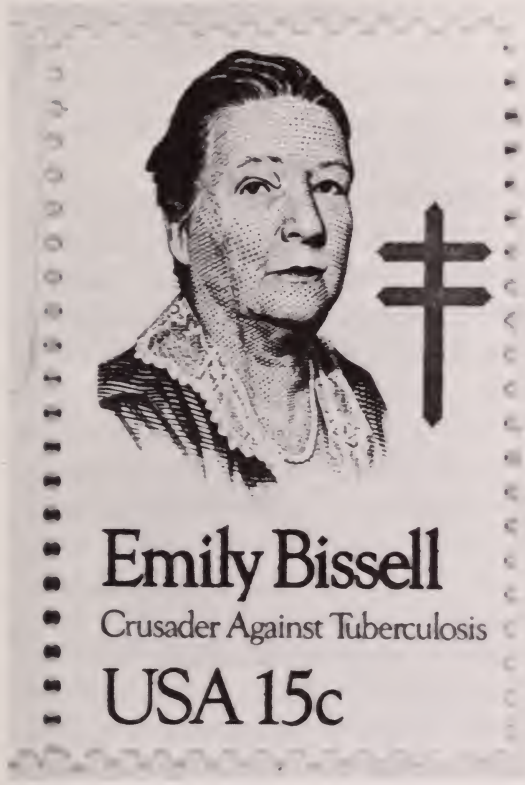

Figure 8. Commemorative stamp issued in 1980 honoring Emily Perkins Bissell, of Wilmington, Delaware, founder of the Christmas Seal Campaigns. (Courtesy of Julia Bissell Leisenring)

Success was assured at once. The 1907 campaign raised $3,000 and led to plans for expanded future sales. The very next year $135,000 was raised, and in 1910 the National Tuberculosis Association joined the Red Cross in promoting the annual sale. Increased publicity for the total cause was a major effect as sales efforts acquired broad volunteer support. In 1919 the National Association assumed full sponsorship.[30]

Philadelphia Attitudes

It is clear that ultimately the results of efforts directed against tuberculosis in Philadelphia were eminently successful. As is usual in any process involving multiple agencies and personalities, there were flashes of brilliance, but there were also long periods during which progress was painfully slow. It would appear that physicians elsewhere

were much more attuned to the new discoveries that promised improvement. In New York the news of Koch's 1882 discovery of the tubercle bacillus and its behavior was greeted by Austin Flint's shouting, "I knew it. I knew it," as he burst into William H. Welch's house, brandishing a newspaper that announced the event in Berlin.[31]

An interesting side observation relates to Edward L. Trudeau's reaction to Koch's discovery.[32] Mrs. C. M. Lea, wife of the Philadelphia publisher, had been under the care of Dr. Trudeau of Saranac Lake for tuberculosis since 1879, and a close friendship had developed. On hearing about Koch's discovery, Trudeau was quite frustrated about his inability to read the full German report. Lea thereupon arranged for translation of the entire Koch article and gave it to Trudeau for Christmas in 1882.* Trudeau immediately set up a primitive laboratory at his house and, without previous experience at bacteriologic technique, became one of the first in America to demonstrate tubercle bacilli on culture. Welch, in addition, immediately proceeded to demonstrate the bacillus in his laboratory. In contrast, the reaction in Philadelphia was much less enthusiastic, skepticism and disbelief in many quarters betraying the entrenched conviction of a hereditary etiology of the disease echoed, oddly enough, the same year when Dr. Alfred L. Loomis, a distinguished New York clinician, proclaimed, "The bacterian theory, which so recently has occupied the attention of medical men, especially in Germany, is rapidly being disproved and consequently is rapidly being abandoned." He also told his students after the Koch discovery, "People say there are bacteria in the air, but I cannot see them." To his credit, Loomis became a firm supporter of Trudeau and was for years a New York examiner for patient candidates for admission to Trudeau Sanatorium. Philadelphia leaders, including S. Weir Mitchell, were much slower in responding, but the prescience of a few like W. H. Webb, who first convinced Flick of the "contagiousness" of tuberculosis, should be noted.

In general the clinical orientation of leaders of Philadelphia medicine acted as a barrier to acceptance of new ideas. The College of Physicians and the Philadelphia County Medical Society were both

* The Leas were also friendly with Mrs. Helen C. Jenks, widow of Dr. William F. Jenks, Fellow of the College of Physicians. Mrs. Jenks in 1884 provided funds for "Little Red," the first Trudeau Sanatorium cottage. She was also a founding member of the Pennsylvania Tuberculosis Society. The Leas later provided funds for "Lea Cottage" at Saranac.

quite slow in their reception of the "cell theory" of tissue structure and the "germ theory" of disease. The period of 1884 to 1889 during which Osler provided a ferment for Philadelphia medical teaching was not sufficient to overcome the inertia. Even he, as noted above, was reluctant totally to abandon the idea of the influence of heredity on tuberculosis. The multiple implications of the scientific era in medicine were more slowly accepted in Philadelphia than in European centers, and with respect to tuberculosis the evidence suggests that the thinking in New York, Boston and Baltimore was more objectively oriented than in Philadelphia. At a discussion at the New York Academy of Medicine on October 18, 1882,[33] especially, the views of William H. Welch and Francis Delafield, indicated a clearer interpretation of developing knowledge of etiology pathogenesis and pathology of tuberculosis than was found in any contemporary Philadelphia medical literature. Personalities continued to dominate relationships until somewhat modified at the turn of the twentieth century. One of the significant events was the appointment of Simon Flexner as Professor of Pathology at the School of Medicine of the University of Pennsylvania,[31] especially since S. Weir Mitchell was one of his principal supporters. Gradually the thrust of scientific endeavor was manifest as Philadelphia medicine rose to the challenge. It is difficult to estimate the effects of efforts directed against tuberculosis in Philadelphia generally, but it is not too much to claim that they contributed.

Conclusion

In Philadelphia the campaign against tuberculosis was conceived for the most part, financed and carried out by agencies outside the medical profession. Some were social, some religious and some of the government. These provided models, many of which were adopted elsewhere to the benefit of public health. The Pennsylvania Society for Prevention of Tuberculosis, the Washington Conference and the Phipps Institute were strong factors in bringing about the decline of a fearsome and costly disease until chemists could strike the final blow. Some physicians, a relative few, were pioneers. It was they who laid out strategy, defined policy and eventually overcame the complacency of their colleagues in an arena of formidable professional politics.

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William Edmonds Horner (1793–1853), America's First Clinical Investigator

DAVID Y. COOPER

William Edmonds Horner, an anatomist and a student of Caspar Wistar, was one of America's earliest medical scientists and played a prominent role in the conversion of the University of Pennsylvania's primitive medical college to a modern medical school. This quiet, deeply religious Virginian served as dean of the medical department for thirty years. During this long tenure his administrative talents and conservative policies provided a stable environment for the institution's growth, while his teaching and scientific contributions enhanced the reputation of the medical department throughout the world.[1]

No other contender comes to mind for the title of our country's first clinical investigator. He, more than any of his colleagues who might be considered for this distinction, such as Caspar Wistar or Philip Syng Physick, contributed new ideas and made original discoveries that advanced the prestige of American medicine. Many of his ideas, however, originated as a result of his close association with Physick in the department of anatomy, so, in all fairness, the father of American surgery should also share some of the luster of this title.

Character

The *Boston Medical and Surgical Journal*'s anonymous writer, Cato,[2] gives us this introduction to Dr. Horner *(Fig. 1)*:

> Five feet seven inches tall, spare, flat breasted, sharp shouldered; high cheek bones, eyes wide apart; almost without expression, in fact like glass; a thin chin, a mouth merely split across his face; a wide and not high forehead, a large head covered with a first-rate black wig, a gait seriously slow and thoughtful, a voice like a cracked pot; neatly dressed with a well-polished boot; his whole appearance that of an automaton moved carefully by some judicious master — We have Dr. Horner.

Those characteristics of his personality that were responsible for his success are described by a more complimentary biographer[3]: "he was quiet, dignified, and sincere. His attitude bred confidence and

A report presented as the 11th Annual Carl F. Schmidt Lecture at the University of Pennsylvania on April 18, 1986.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 3 (1986); 183-200.
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Figure 1. William Edmonds Horner (1793–1853). Portrait painted from memory by John Neagle, 1853.

respect. Unostentatious, he abhorred flattery. Polite, he avoided obsequiousness; of mediocre mental endowment, he nevertheless surpassed his most brilliant confreres through sheer force of will and indomitable purpose."

William Horner would have appreciated these vignettes of himself, descriptions that reduced him to the picture of "mere man," for he writes in his *Necrological Notice of Dr. Philip Syng Physick,*[4] "Our predisposition to favor great men makes us eulogize their values and strong points, and suppress the narration of weakness and peculiarities: yet much of the interest which attaches to them upon moral and philosophical grounds depends upon a knowledge of both sides of the question."

Horner's capabilities were doubtless disguised by his outward appearance and personality. No mediocre scholar or retiring soul could hold the adjunct chair of anatomy for twelve years (1818 – 32), be chosen to fill the chair of anatomy in 1832, hold it until 1853, and

make original contributions in the fields of anatomy, ophthalomology, and pathology while serving as dean of the medical department.

Early Career

Dr. Horner was born in Warrenton, Virginia on June 3, 1793. He obtained his early education in that town from the Reverend Charles O'Neil, an Episcopal clergyman. After completing his classical education, he began his medical studies with Dr. John Spence, a Scottish physician who had been educated in Edinburgh. In 1812, while still with Spence, Horner attended two sessions in the medical department of the University of Pennsylvania. From the outset, anatomy was the branch of medicine that interested him most.

An abstract from a letter written to his father in these early student days presents a summary of Horner's attitude toward learning:

> The books you sent me gave great satisfaction. Instead, however, of satisfying my present anxiety to become well acquainted with the structure of the human body, they have excited in me enthusiastic zeal to commence practical anatomy. A man, with the assistance of maps, may obtain a tolerable knowledge of countries, but it is only by traversing them that he becomes the geographer in reality. In like manner it is with the anatomist, for no anatomist plates can give that confidence as to induce him to undertake a surgical operation, or give him as good an idea of the subject as dissection.[5]

With the War of 1812 in progress, Horner, still a medical student at the University, was commissioned a surgeon's mate in the U.S. Army in July 1812. He was stationed near the Canadian border above Buffalo. Although such a frail man would seem a poor candidate for a military surgeon, he soon proved himself fit for the task. He effectively organized the wards of the primitive hospital and aggressively treated the wounded. He returned for the winter session at the Medical School at Pennsylvania and received his degree in the spring. He then returned to his army post and remained there until the war ended. An anecdote he published in the *Medical Examiner*[6] in 1852 gives some insight into his personality and sense of humor, however macabre:

> I remember one day in making my hospital rounds, a patient just arrived, presented an amputated forearm, and in doing so could scarcely restrain a broad laugh; the titter was constantly on his face. "What's the matter? This does not strike me as a subject for laughter." "It is not, Doctor, but excuse me, I lost my arm in such a funny way, that I still laugh when I look at it." "What way?" "Our first sergeant wanted shaving, and got me to attend to it, as I am corporal, and we went out together in front of his

> tent. I had lathered him, took him by the nose, and was just about applying the razor when a cannon ball came, and that was the last I saw of his head and of my hand. Excuse me, Doctor, for laughing so. I never saw such a thing before."

At the end of the war Horner resigned from the army and returned to Warrenton, where he set up a medical practice and shared an office with his brother, a lawyer. After a few months he informed his brother and his family that he was returning to Philadelphia. Later, Horner repeatedly stated that the reason for his leaving home was that "Virginia is a fine nursery for young men but a poor theater for the display of their abilities."[7] When he left Warrenton he wrote, "The Rubicon is passed — I have put all at hazzard. Oh, thou Father Everlasting, be propitious to my cause."[8]

Teaching and Research

Horner's prospects at the beginning of the year 1816 were far from encouraging. His health was poor and his financial reserves were nearly exhausted. His first winter in Philadelphia was spent attending courses at the University of Pennsylvania and studying practical anatomy. His systematic dissections and his care for details, however, soon attracted the attention of Caspar Wistar, Professor of Anatomy. One year later he offered Horner the position of "Prosector" of his department with a salary of five hundred dollars per annum. Horner immediately accepted the offer and, despite the meager salary, was soon free from the want that had continually plagued him since he left Warrenton.

The year 1817 was one of progress for Horner. Not only was Wistar impressed with his work, but now he had begun to teach anatomy in Nathaniel Chapman's Medical Institute, a school founded to give students extra instruction during their vacation months. His security, however, was short lived, for Caspar Wistar died of typhus fever on February 4, 1818. Horner wrote that "his hopes were destroyed."[9]

John Syng Dorsey, chosen to replace Wistar, appointed Horner his demonstrator. But Horner's hopes were again dashed when Dorsey was stricken on the evening of his introductory lecture with a disease that proved fatal within a fortnight. Philip Syng Physick then gave up the chair of surgery to take the chair of anatomy, and William Gibson was chosen to fill the chair of surgery. During this transition the young Horner took responsibility for a great share of the teaching. The zeal with which he pursued his work under Physick resulted in his appoint-

ment as adjunct professor of anatomy at the beginning of the scholastic year of 1819, the year he was elected to membership in the American Philosophical Society. His proposers were Nathaniel Chapman and a Philadelphia colleague, Richard M. Patterson.[10]

After his appointment as adjunct professor, his financial fortunes were even further improved by his marriage to Elizabeth Welsh on October 26, 1820. Miss Welsh was the third daughter of John Welsh,[11] a prominent merchant, well connected in Philadelphia. Although it has been stated that love was inconceivable to Horner, when the time came he married the only woman he ever loved and enjoyed a marital happiness far beyond his expectations. Of their ten children, four daughters and two sons survived their parents.[12]

One year after his marriage Horner embarked on his plan for learning of the world through travel. In March 1821 he began an eight-month trip to Europe, which included traveling through England, Scotland, Holland, Belgium, France and Ireland.[13] It is hard to imagine that anyone could have seen more in a brief stay overseas; he visited many important national monuments and described all of them. In addition, he attended important clinics and visited the dissecting rooms and anatomic museums of anatomists of these countries before returning to Philadelphia in December 1821. This was an important trip for Horner, a first-hand introduction to European medical science, which he would spend the rest of his life establishing in Philadelphia.

On his return Horner resumed his role of teaching anatomy, and it was not long before what he learned in Europe began to appear in his original contributions. From then until his early death, Horner's life can be accurately and briefly summed up in the exhortation of the great French physician François Xavier Bichat: "Dissect in anatomy, experiment in physiology, follow the disease and make the necropsy in medicine. This is the three-fold path without which there can be no anatomy, no medicine, no physician."[14]

In 1822 Horner was appointed dean of his Medical School. He held this position until 1852, when he resigned because of ill health a few months before his death. He proved himself a good administrator, as is evidenced by the fact that he ran the Medical School essentially single-handedly for thirty years.[15] It was said that finances were never in better hands; he admitted students, fought to maintain high academic standards, and ably conducted faculty meetings. While carrying out these duties, he hand-wrote all minutes of the meetings and letters

to students concerning admission and their qualifications for obtaining an M.D. degree. Near the end of each school year he made arrangements for commencement exercises and personally wrote to local politicians and dignitaries inviting them to the services. That he accomplished all this with no assistant dean or even a secretary during his tenure is nothing short of astounding.

Publications

In 1823, a year after he became dean, he published his first book, a dissection manual, *Lessons in Practical Anatomy for the Use of Dissectors.*[16] Five editions were forthcoming. His other major books included *The Treatise on Special and General Anatomy,*[17] which appeared in eight editions between 1826 and 1852 (the last two under a different title, *Textbook of Anatomy and Histology*[18]), and a *Treatise of Pathological Anatomy,* published in 1829.[19] This was the first textbook of anatomy written in America. In 1930 Esmond Long[20] wrote that it was not a very good textbook; he complained that Horner did not speculate enough on the etiology of the diseases and depended mainly on secondary sources. Despite such defects, the text served the important function of introducing the new science of pathology to America. Later, better texts, such as that of Samuel D. Gross, were founded on this pioneering work.

In *Lessons in Practical Anatomy for the Use of Dissectors,*[21] Horner stated in the Preface that most of his conclusions were based on the observations of other anatomists. However, his description of the tensor tarsi muscle and the function of the epiglottis and larynx were his own ideas.

The tensor tarsi muscle is the only contribution for which Horner* is remembered today. Horner had noted in his clinic that in a number of obese patients the lower eyelid fell away from the ball and tended to collect tears in the pocket at the inner corner of the eye, which

* Horner is sometimes mistaken for Johann Friedrich Horner of Zurich, Switzerland, who reported that the symptoms myosis, ptosis and enophthalmos (Horner's triad or syndrome) frequently developed simultaneously. He attributed the ptosis of the upper lid to sympathetic paralysis. (Horner, J. F. "Ueber eine Form of Ptosis." *Monatsblatt fur Augenheilkunde* vii [1869]: 193–98). In 1951 Bruno Kisch (Kisch, B. "Horner's Syndrome: An American Discovery." *Bull Med Hist* 25 [1951]: 284–89) drew attention to the fact that this syndrome was more clearly described in 1864 by S. Weir Mitchell in Mitchell, Moorehead and Keen's pamphlet entitled *Gunshot Wounds and Other Injuries of Nerves* (Philadelphia, 1864).

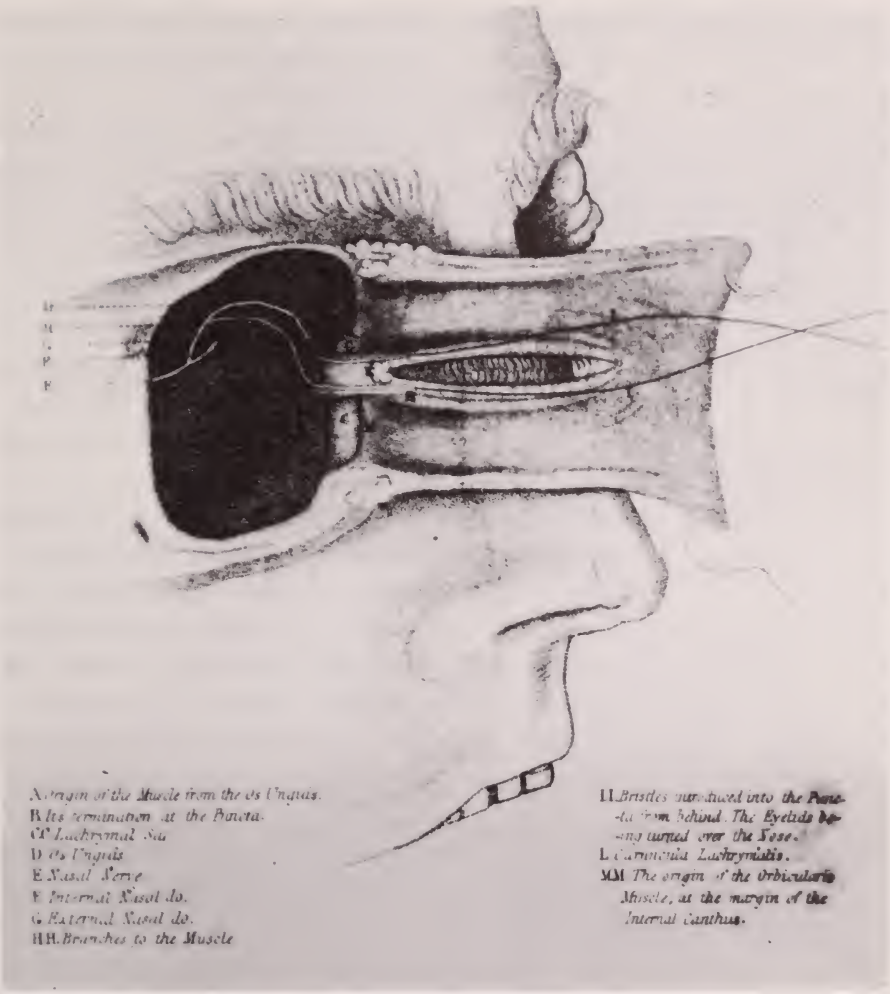

Figure 2. Horner's dissection of the tensor tarsi muscle (Horner's muscle). From Horner, W. E. 1824, *Philadelphia Journal of Medical and Physical Science* 8: 70–80. Courtesy of the Historical Collections of the Library of the College of Physicians of Philadelphia.

overflowed down the patient's cheeks (a condition called epiphora). He had also noted in the fainting spells during Caspar Wistar's last illness that the lower lid fell away from the ball and there was tearing. While teaching his students anatomy in the winters of 1821 and 1822, he used sheep's eyes to demonstrate the structure of the eye. During these demonstrations it occurred to him to seek an explanation for

the cause of the relaxation of the eyelid and the tearing he had previously observed. He was unable to find a structure in sheep's eyes that explained such a function of the lacrimal system.[22]

He then dissected the orbit of a human and found a small, distinct muscle about half an inch long and a quarter of an inch wide that originated from the posterior orbital ridge of the lacrimal crest (*Fig. 2*). The muscle then passed anteriorly behind the lacrimal sac and lacrimal ducts and inserted at the lacrimal puncta. In the upper lid its fibers interdigitated with the ciliary portion of the orbicularis oculi, whereas in the lower lid it had a definite insertion. Physick[23] suggested that its function is to pull the lids to the eyeball and adjust the puncta for collecting tears, which were conducted through the lacrimal ducts to the lacrimal sac and then into the nose.

Horner presented his findings to the American Philosophical Society on March 1, 1822. The minutes[24] of this meeting state, "Presiding Mr. DuPonceau V.P. in the chair. Dr. Horner read a paper entitled 'Remarks on a portion of the muscular structure of the eyelids not commonly noted by writers,' which was referred to Drs. Hewson, Gibson, and Parrish." At the April 5 meeting, with Mr. Patterson in the chair, the minutes state, "The committee to whom was referred Dr. Horner's paper read on the first of March, not being ready to report was continued."[25]

On April 6 Horner, suspecting that his colleagues were delaying publication of his new discovery, sent an identical manuscript to Mr. Shaw, a London anatomist whom he had met on his European tour. Mr. Shaw transmitted this manuscript to the *London Medical Repository*.[26] It was accepted for publication but with this footnote appended:

> Mr. Shaw also favored us with the following opinion respecting its originality, in which we entirely concur:—"I think that the muscle described by Professor Horner, is the same which has already been depicted in [Johann Christian] Rosenmuller's plates; but the description given here is so different and so much better, that I have no hesitation in admitting Professor Horner's claim to the merit of having discovered it without having derived any assistance from the labors of others."[27]

The muscle Horner described is not clearly depicted in Rosenmuller's plates,[28] nor is it described in the accompanying Latin text. It is not clear what structure Mr. Shaw referred to. However, it *was* described about a hundred years earlier by Joseph Guiscard Duvernay,[29]

and it is clearly depicted in one of his plates, illustrating the same dissection as that used by Horner.

Horner's paper was finally approved for publication on July 22, 1822, in the *Transactions of the American Philosophical Society* after the original committee was dismissed and a new committee, consisting of Richard Harlan and James Mease, was formed.[30] He defended his priority in a paper published in 1824 in the *Philadelphia Journal of Medical and Physical Sciences*[22] and accurately described the function of the tensor tarsi muscle in conducting tears into the nose. Thus Dr. Horner deserves credit for discovering the function of this muscle, although he was not the first to describe it.

Included in the *Lessons*[31] is a discussion of the function of the epiglottis. In numerous dissections Horner had found that, while the epiglottis is a rigid structure, he could not see how it could be pulled down to close the upper airway, as was thought to happen by anatomists at that time. There were no muscles present to perform such a function. He thought that if it closed by moving downward over the upper airway, food and liquids must push it down, but they did not have the force to do this. He realized, however, that there were muscles that could constrict the larynx and pull it upward into the base of the epiglottis. He therefore proposed that the larynx was shortened by the action of thyrohyoideus and other laryngeal muscles around the thyroid and cricoid cartilage. This explanation satisfactorily explained to Horner why a patient[32] of Baron Larrey's who had the upper part of his epiglottis destroyed by a musket ball had so little difficulty with aspiration of food during swallowing.

In 1824 William Potts Dewees published his textbook on midwifery.[33] There is a letter from Horner on page 580 of this work that describes an extraperitoneal approach for Caesarean section. From personal experience Horner was aware of the serious consequences associated with entering the peritoneal cavity, observations drawn from patients who had undergone Caesarean section at the Philadelphia Almshouse. He and Physick noted that the peritoneum does not adhere to the lower uterus, cervix, and vagina. When the bladder is full, the peritoneum is pulled away with the bladder, leaving an area at the base of the uterus with no peritoneal covering. They proposed that a safer operation would be to enter the lower abdomen and dissect the peritoneum from the dome of the bladder, permitting the surgeon to reach an area of the uterus that was both free of peritoneum and

large enough to make an incision and remove a fetus.

In 1826 Horner[34] reported the first successful method for cure of a ruptured achilles tendon. He approximated the tendon by passing a needle carrying a thin ribbon an inch wide through the torn ends and removed the ribbon when the wound began to suppurate.

In this same year Horner published the first edition of his *Treatise on Special and General Anatomy.* He wrote the text to facilitate his teaching of anatomy as well as to divert the students from using English texts, particularly that of Dr. Charles Bell, which he felt had exerted a bad influence on them. This story about Bell's treatment of a leech catcher particularly disturbed Horner:

> This same unfortunate leech catcher, with such an unusual distribution of the great iliac artery, had his misery increased by the formation of a "prodigious aneurysm" at the point injured. "Upon opening the tumor fully, with an incision eight inches long, and turning out the great clots, the blood was thrown out with a whistling noise, and with such impetus, that assistants were covered with it, and the bag (aneurysm) was filled with sponges and cloths of all kinds that were insufficient to arrest the bleeding. Seeing in this critical moment that if he was to be saved it was to be only by a sudden stroke, I ran the bistoury upwards and downwards, and at once made my incision two feet long." This tale bears with it a hyperbolical, romantic character, and if Mr. Bell had also said, that he and the ten assistants had been floated to the other side of the operating room we should have considered the swim as only an addition to the figurative and oriental style in which his ideas are generally conveyed.[35]

Horner made three more significant anatomic contributions. He described the membrane that lined the larynx, which he called the vocal membrane.[36] He also described the cartilages of the bronchi and suggested that they were so constructed to hold the bronchi open in the same manner as does cardboard placed in ear bonnets.[37] With Physick, he suggested that the transverse muscles between the bronchi functioned to narrow their lumen. This narrowing increased the air flow rate, which in turn increased the force in the bronchi sufficiently to expel mucus.[38]

This last anatomic contribution is another stimulated by the work of Physick, who treated rectal infection by incising the swollen rectal columns. Horner demonstrated that there were muscles in the rectal wall that passed external to the internal rectal sphincter and turned up at the anal skin junction to insert in the base of the rectal columns, an arrangement that explained the mechanism of rectal eversion and prolapse.[39]

Cholera

When the first cholera epidemic arrived in Philadelphia in 1832 Nathaniel Chapman was placed in charge of mobilizing the medical profession to meet its challenge. Several cholera hospitals were organized; Dr. Horner was chosen to head the Third Cholera Hospital on Dock Street.[40] In the first epidemic, Horner was so busy attending the patients that he had no opportunity to study the disease systematically. During the second epidemic, when there were fewer cases, Horner had time to observe the course of the disease and relate the symptoms to the findings at autopsy.[41] From the outset he was puzzled by his observations that the postmortem findings were inadequate to explain the severe clinical symptoms of the disease.

While investigating this question, he worked out a method for demonstrating the epithelial lining (membrane) of the intestinal tract. He did this by stripping the peritoneum from a segment of intestines, turning it inside out, tying both ends and forming a bag. He then carefully filled the bag with air. The epithelium separated from the subepithelium layer except where it was attached to structures he called follicles. The epithelial surface now looked like a perforated iron plate. He went on to demonstrate with injection techniques that there was a large superficial venous layer.

Horner's ideas about the pathogenesis of cholera can be summarized as follows: the follicles of the intestine numbered more than forty million, and he estimated that the intestine had an excretory surface equivalent to the size of a breakfast table. He reasoned that early in the disease large amounts of fluid were lost from this surface, and this large loss produced symptoms essentially the same as those that accompanied large blood losses. Horner also thought that there was a deposition of fibrin on the surface of the intestine and that this, with mucus, probably explained the lumps in the watery stool, giving them the classic rice-water appearance. He speculated that when the superficial venous layer was damaged, mortification set in and patients died. At this stage vesiculation and ulceration of the intestines were found at autopsy. Although he stated that there is ulceration at autopsy, he did not at any time conclude that denuded, necrotic epithelium was the origin of the rice-water stool, as pathologists have until recently assumed.

In 1834 in the course of these studies, about two months after Thomas Latta had reported his case (in which he infused a salt solution

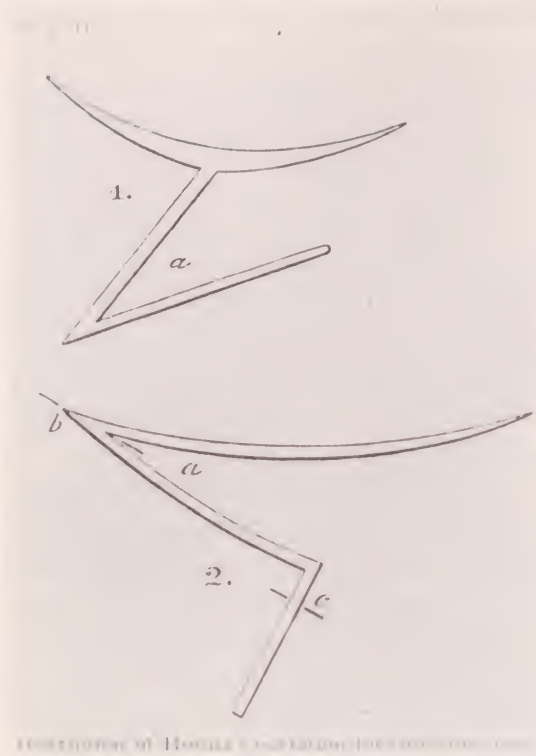

Figure 3. Diagram of Z-Plasty originated by William E. Horner. From *American Journal of Medical Sciences* (1837). Courtesy of the Historical Collections of the Library of the College of Physicians of Philadelphia.

into the veins of a woman who was dying of cholera), Hugh Lennox Hodge, Horner, and Samuel Jackson[42] infused about 2,500 ml of a solution of muriatic acid and sodium bicarbonate into the medial basilic vein of a patient at the Philadelphia Hospital. This infrequently cited report is the second documented attempt to inject fluid and electrolytes intravenously into patients suffering from their profound depletion. Unfortunately, both Latta's patient and the Philadelphia patient died.

Plastic Surgery and Anesthesia

In 1837 a diagram (*Fig. 3*) from Horner's clinics in the Philadelphia Hospital appeared in the *American Journal of Medical Sciences.*[43] This is the first description of a Z-plasty. It was used to correct ectropion of the lower eyelid in a patient whose face had been severely

burned. Horner frequently used the old Allen* or Dieffenbach[44] procedure for this purpose. However, when he needed more healthy tissue he devised this original procedure by using the old ideas of Indian surgeons who obtained the skin required to construct noses that had been cut off as punishment by swinging a flap from the forehead to the nasal region.[45]

Horner modified their technique by ingeniously making a cut in the shape of a Z, the top of the Z being an incision made transversely along the scar. He moved the skin bounded by the lower angle of the Z up into the horizontal incision and closed the lower horizontal part of the Z to its diagonal. Harelip pins were used for the closure. A little later,[46] he used a modification of this procedure to close the space between the rectum and the vagina in a woman whose perineum was torn in childbirth. Here he swung two pedicle flaps, one from each side, to form a Z. These flaps held and repaired the external defect. Horner was unable, however, to close the rent in the rectum.†[47]

Dr. Isaac Parrish[48] reported in the *Transactions of the College of Physicians of Philadelphia* on the use of anesthesia in America that ether was first used in Philadelphia by William Gibson in May 1847. He used it successfully in an operation to remove the tip of a medical student's finger. The same month, Horner used ether for a more extensive surgical procedure—the removal of a carcinoma of a woman's breast. His experiment, however, was considered a failure because the patient became excited in the midst of the operation and the use of the anesthetic had to be discontinued. The following September, Horner successfully used ether to treat a fissure of the anus with caustic. This procedure was done about two months after Joseph Pancoast had used ether successfully in the Jefferson Medical College surgical clinic. Thus, Horner was one of the early supporters of the use of ether in Philadelphia; of the first fifteen trials in the surgical clinic of the

* The blepharoplasty of Sir William Allen is performed by taking a V incision with its open end below and facing the scar or defect. The lower portion of the V incision is closed side to side while the top part is closed to form a wider V, thus pushing healthy tissue into the area of the defect. The final suture line has the shape of a Y.

† In this paper Ivy credited Charles Pierre Denonvilliers with originating this procedure in 1856. A few years later this misconception was corrected in the following article, which presents definite evidence that Horner originated this procedure; Bages, A. E., and Gibson, T., 1973; The origin of Z-Plasty. *Br J Plast and Reconstr Surg* 26: 237–46.

University of Pennsylvania at the Philadelphia Hospital, eight were his.[49]

Last Days

Horner's health, which had gradually failed since 1842, began to deteriorate rapidly. From 1851 through 1853 there were increasing numbers of notes to his assistant, Joseph Leidy, that read: "Dear Doctor, I am indisposed and require further rest for recovery. Please take my lecture for next ———."

Horner died on March 13, 1853. Samuel Jackson describes the poignant scene that occurred three days earlier at Horner's home:[50]

> Henry Smith and myself on each side. Dr Horner was suffering from some pain; a new symptom had just commenced. He demonstrated with his finger the different regions of the trunk, enumerating the organs they contained and the state of each, and indicated the exact seat where he suffered most. This was done with the indirect and earnest manner of a demonstrator to his class. I was so struck with it as to call the attention of Doctor Smith to this display of "ruling passion strong in death." "Look! here is the anatomist dissecting his body—making a post mortem before he is dead." The remark so amused Doctor Horner, that he laughed heartily, in which we joined him. At the end he said, "Well, I have not had such a good laugh for a long time."

There you have Dr. Horner.

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Acknowledgments

The author wishes to thank Mr. Thomas Horrocks, Curator of the Historical Collections of the College of Physicians of Philadelphia, for reading this manuscript and the valuable suggestions he made for its improvement; Jean Carr and Brenda Galloway, also from the Historical Collections, for their assistance; Hamilton Y. Elliot, Jr., Mark Frazier Lloyd, and Maryellen C. Kaminsky of the University of Pennsylvania Archives for their assistance; Linda Mills for reading this paper; Gail Farr for providing additional information on Horner; and, for her help, Beth Carroll-Horrocks, Manuscript Librarian at the American Philosophical Society.

A physician, in fact, is by no means physician to living beings in general, not even physician to the human race, but rather, physician to a human individual, and still more physician to an individual in certain morbid conditions peculiar to himself and forming what is called his idiosyncrasy. Hence it seems to follow that medicine, in contrast with other sciences, should be established more and more on particulars.

Claude Bernard
An Introduction to the Study of Experimental Medicine
Dover Publications, Inc., New York, 1957, p. 92

REVIEW

AUSTRIAN, R. *Life with the Pneumococcus: Notes from the Bedside, Laboratory, and Library.* 168 pp., illus. Philadelphia: University of Pennsylvania Press, 1985. Price $25.00.

Reviewed by STANLEY A. PLOTKIN

This book can be viewed from several perspectives.

It is first of all a collection of essays by a physician and a respected medical scientist. The essays have all been previously published in journals and therefore vary in subject and literary intent, but they are sufficiently related to form a coherent picture. In these pages one finds clinical pearls, historical perspective and modern concepts of *Streptococcus pneumoniae.* Chapters are included bearing on the discovery of the pneumococcus and pneumococcal pneumonia, the syndrome of pneumococcal endocarditis and the role of toxemia in pneumococcal meningitis.

The book is also an autobiography of one who has built his career on the study of one microorganism. The autobiographical material has to be gleaned from the facts presented, for with characteristic modesty Austrian has not added a curriculum vitae to the book. Nevertheless, the essays reveal that he took up the study of the pneumococcus at an early age when he was still at Johns Hopkins, that he continued his studies in New York from 1952 to 1962, where he showed that pneumococcal pneumonia was still deadly despite the use of antibiotics, and that as Professor of Research Medicine at the University of Pennsylvania he designed pneumococcal vaccines to prevent bacteremic disease.

Lastly this book is the story of a life well lived, a success story in which careful thought and hard work culminate in a great achievement. In this regard it is a lesson to others who work in biomedical research: often the quickest way to a goal is slow and steady accumulation of hard-won facts.

Austrian's writing style reflects the man: clear, precise, elegant and dotted with wry humor. That the writing is the product of hard labor is obvious. Craft in prose is something of an anachronism these days, but then Robert Austrian is something of an anachronism, as he himself would probably admit. He comes from that Oslerian tradition in which

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clinical medicine was an art to be practiced with meticulous attention to detail. Here is Austrian's characteristic voice: "It is easier to obtain an X-ray of the chest than to carry out and record the inspection, palpation, percussion, and auscultation thereof, but I have seen at least four instances in which an erroneous clinical diagnosis of pneumonia was concurred in by the radiologist when both the history and physical examination pointed clearly to the true nature of the illness, tuberculous pleurisy with effusion."

In the practice of his science, Austrian reflects the tradition of careful, painstaking transfer of clinical data to the laboratory and of laboratory techniques to the bedside. See, for example, the chapters on "The Current Status of Bacteremic Pneumococcal Pneumonia" or the one on "The Quellung Reaction: A Neglected Microbiologic Technique."

Robert Austrian's career epitomizes the best qualities of American medicine during the last 100 years. To maintain those qualities, young physicians especially are encouraged to read this book.

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REVIEW

SACKS, O. *The Man Who Mistook His Wife for a Hat and Other Clinical Tales.* 233 pp. New York: Summit Books, 1985. Price: $15.95.

Reviewed by MARIAN K. APPEL

The Man Who Mistook His Wife for a Hat and Other Clinical Tales. Does this title sound like a series of medical case histories or more like a diverting compilation of bizarre stories by Dr. Arthur Conan Doyle?

The book is both and more. I found it profoundly moving because of the author's sympathy for the heroic struggles of his neurologically disordered patients in their efforts to "preserve their identity in adverse circumstances."

And what circumstances!

Dr. P., who mistook his wife's head for a hat, was not conventionally demented. He was the victim of progressive organic brain disease. Objects and faces were totally unreal to him. He lived exclusively in the world of the abstract, and for him "music had taken the place of image, he had no body image, he had body music; this is why he could move and act as fluently as he did, but came to a total confused stop if 'the inner music stopped.' His musical knowledge was vast; he sang like an aged, but infinitely mellow Fischer-Diskau." In fact, the only way he could manage the details of daily living was to keep up a continuous low humming or singing while eating, dressing, bathing, etc. His wife said, "If he is interrupted, loses the thread of his song, he comes to a complete stop, doesn't know his own clothes or his own body." In a family photograph he could not make out the faces of his own relatives — only an eye here, a nose there. No "person" in the faces. Given a red rose by the author, he took it and commented, "About six inches in length, a convoluted red form with a linear green attachment." Only after being asked to smell the object did he recognize it as a flower, a rose. "Reality, it seemed, might be conveyed by smell, but not by sight."

It is profoundly instructive to share Dr. Sacks's view that "the concrete is elemental — it is what makes reality 'real,' alive, personal and meaningful. All this is lost if the concrete is lost, as we saw in the case

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 3 (1986); 203-205.
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of the almost Martian Dr. P., 'the man who mistook his wife's head for a hat,' who fell from the concrete *to* the abstract."

What, then, did the physician recommend for Dr. P's future? "That he make music the whole of his life." Thus, he lived and taught music till the end of his life, dying from the massive tumor that had invaded the visual areas of his brain.

Dr. Sacks is Professor of Clinical Neurology at the Albert Einstein College of Medicine, a man who describes himself as "equally a theorist and a dramatist." These "Clinical Tales" are presented from both points of view. The combination is irresistible.

His book is divided into four parts, each with an introduction explaining the type of condition cited in the tales. Each of these is a clear and brilliantly evoked depiction of an essential human being still alive amid the terrifying chaos of severe brain impairment. These the author lists as follows:

Part One: Losses
Part Two: Excesses
Part Three: Transports
Part Four: The World of the Simple.

Each tale beckons the reader with such tantalizing titles as:

The Lost Mariner
The Man Who Fell Out of Bed
The Twins
The Disembodied Lady

We are privileged both to share the diagnostic information of each patient and to look at it in a new way. Instead of apparent distasteful grotesqueries, the symptoms of amnesia, epilepsy, neurosyphilis, stroke, migraine, and retardation, among others, are presented as wonderful and strange reactions of a brain to alterations in its function. The emphasis is always on the *person* involved, his experiences and his struggle to survive his affliction.

Dr. Sacks describes the capability for deep, sustained religious conviction in an amnesiac for whom "whatever was said or shown or done . . . was apt to be forgotten in a few seconds' time."

The Tourette's disease sufferer, although almost incapacitated by attacks of multiple tics of extreme violence, coming in volleys every

few seconds, was enabled by a combination of psychotherapy and medicine to use his frenzied motions drumming as a jazz musician on weekends while keeping his tics under control with Haldol during the week.

We are told of Hildegarde of Bingen, a twelfth-century nun who had countless visions from early childhood to the close of her life, visions of extraordinary religious and aesthetic beauty. Their showers of glittering stars and "clouds of living light" were undoubtedly migrainous, according to Dr. Sacks's diagnosis. So we may suppose that in migraine the nerve ends of the brain can be transformed into "a privileged consciousness of a supreme ecstatic experience."

Dr. Sacks's respect for his patients' courage, dignity and the will to preserve an identity despite incurable brain impairment is truly inspiring. All his "tales" are dramatic and poignant, free of any trace of bathos, mawkishness or "talking down." They are engrossing to read, not once but often. He sees solace for even the most damaged brain in the contemplation of nature, art, drama and music. The experiences of his patients evoke his sense of wonder and our own as we try to perceive them as "travellers to unimaginable lands, [whose] journeys have a quality of the fabulous."

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REVIEW

SZKLO, M., et al., eds. *Epidemiologic Reviews,* vol. 7. 212 pp.; index. Baltimore: School of Hygiene and Public Health, Johns Hopkins University, 1985. Price $15.00.

Reviewed by PAUL DAVID STOLLEY

This is the seventh volume of an annual series of reviews of the epidemiology of various disease conditions, produced by the *American Journal of Epidemiology* and the Johns Hopkins School of Public Health. Previous volumes have been of high quality and remain extremely useful references for the practicing epidemiologist, public health physician or other health professional interested in a comprehensive review of the epidemiologic pattern of a particular disease.

Volume 7 reviews nine different topics, beginning with a twenty-page article on the epidemiology of AIDS by three authors who are members of the AIDS Branch at the Center for Disease Control. This is an excellent overview and is not outdated, although it offers little about the latest efforts to develop a vaccine. The figures and tables are first rate and would be excellent for teaching purposes.

Another article worth special mention is the one dealing with the epidemiology of osteoporosis and osteoporotic fractures, an important cause of both morbidity and mortality in the elderly population. A particularly useful section of the article points out important areas that require more research; we know very little about prevention, and medication regimens are only now being evaluated by means of randomized controlled trials.

For those interested in the history of epidemiology and the development of modern methods of analysis, an article entitled "Epidemiology in the United States after World War II: The Evolution of Technique" by the distinguished Professor of Epidemiology at Columbia University, Dr. Mervyn Susser, is a real treat. In it he reviews the early uses of the case-control method and the interest in what Campbell and his colleagues have called the quasi-experiment: i.e., a type of longitudinal design employed when randomization is not possible. This latter design was used to demonstrate the efficacy of fluoridation of municipal water supplies in the prevention of dental caries.

Drs. Thomas London and Baruch Blumberg of the Fox Chase Can-

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cer Institute have contributed a superb review of the epidemiologic investigations they and others have carried out on the Hepatitis B virus. Their own work on the relationship of this virus to hepatocellular carcinoma is especially noteworthy.

Some of the other reviews cover the role of estrogens in heart disease; genital Herpes Simplex virus infection; and the epidemiology of cancer in children. This volume is well worth the $15 price and is of a higher quality than most multi-authored books that often sell for three times as much.

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REVIEW

TAYLOR, R. *Saranac., America's Magic Mountain.* 308 pp., illus. Boston: Houghton Mifflin Company, 1986. Price $17.95.

Reviewed by JOHN L. McCLENAHAN

During the sixty-odd years between Koch's discovery of the tubercle bacillus and the introduction of antimicrobials for its suppression it was the custom for tuberculars to seek recovery in mountain sanatoriums or in the Arizona desert. Many, particularly in the eastern United States, withdrew to Saranac Lake, New York, an Adirondack village where, with notable success, Dr. Edward L. Trudeau had established his cottage sanatorium in the eighties. There were no effective drugs for the treatment of tuberculosis, and it would be years before surgery would offer hope through collapse therapy — so what remained, for those who could afford it, was a program of fresh air, ample diet and rest. The duration of treatment was unpredictable owing to the caprice of the disease, and the prescribed rest, depending on the sentiments of one's physician, could be partial or strict — the latter a system of provisional mummification. Brigades of patients lay flat on verandas, swathed in blankets, inhaling the frigid Arctic air and contemplating the golden slopes of Mount Pisgah. The company detained "chasing the cure," in the parlance of the day, were, for the most part, a lively and courageous crew. It included artists of genius, rakes, interns, debutantes, alcoholics, assassins and parsons. After a year or two, or whatever, their *évasion* accomplished, the night train carried them home in a berth or in a box.

Robert Taylor, a critic for the *Boston Globe,* has threaded together some of the history and legends of Saranac Lake with a sympathetic touch. His early pages are his best. Here he traces two nineteenth-century ideas — Emersonian reverence for nature and the theories of certain European clinicians — that converged to create the sanatorium industry. Such men as W. T. Stillman, Winslow Homer, Louis Agassiz and Jeffries Wyman, several of them cryptoconsumptives, discovered an inner peace in isolated camps not far from Saranac Lake while Alpine climatologists Herman Brehmer and Peter Dettweiler were reporting that high altitudes, cold and tranquillity could restore inflamed lungs and despairing hearts.

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The result was a mushrooming health industry. Mr. Taylor devotes chapters to Dr. Trudeau's pilgrimage to the woods with the simple aim of dying in comfort, his subsequent improvement and the quick popularity of his course of treatment. We read of those who came to the village in search of health — Robert Louis Stevenson, surviving a bitter winter plotting *The Master of Ballantrae;* Christy Mathewson; Norman Bethune; and a poet, Adelaide Crapsey, failing, failing as she penned her sparse lines:

> *Well and*
> *If day on day*
> *Follows, and weary year*
> *On year . . . and ever days and years . . .*
> *Well?*

Celebrities came to the mountains to visit friends and sit beside dying relatives — Somerset Maugham, "Legs" Diamond, Thomas Bailey Aldrich, Sara and Gerald Murphy.

Mr. Taylor's narrative fits smartly about the chest, but elsewhere the design is somewhat padded. In the second half of the book accounts are set down that contribute very little to the story of tuberculosis, such as Albert Einstein's vacation cottage, the relationship of a skiing accident to Sylvia Plath's distemper and the opulence of Marjorie Merriweather Post's hideaway on Upper Saint Regis Lake. This is a pity, because, had he dug a bit further, the author could have come up with legends of gallantry, folly and heartbreak that are yet to be recorded from America's Magic Mountain. Here and there he permits us tantalizing hints of such — for example, Allen Seager's precise and hilarious account of how his porchmate put himself to bed on frigid nights. "He had so many wool blankets on his bed that he used a bookmark pinched from the library to tell where to insert himself . . . ."

Saranac will appeal to anyone with an interest in the burdens of chronic disease. We can hope that it will serve as a stimulus to others to mine a virgin lode of American folklore and biography. It is particularly recommended to doctors and nurses who, not so long ago, were condemned — privileged — to be still for a time waiting for health and self-discovery.

535 Telner Street
Philadelphia, PA 19118

Items of Interest from Philadelphia Medical Centers

Hahnemann University. *F. William Sunderman, M.D., Ph.D.,* Professor of Pathology and Director, Institute for Clinical Science, has been elected a life trustee of the Bermuda Biological Station for Research, Inc.

Lindback Foundation Awards for distinguished teaching have been given to *Carol Long, Ph.D.,* Associate Professor of Microbiology, and *Thomas Gain, M.D.,* Professor of Surgery and Associate Director, General Surgery Residency Program.

The graduating class of the School of Medicine has given its Golden Apple Award "for contributing most to the class's welfare" to *Hugh D. Bennett, M.D.,* Professor of Medicine and Associate Dean of Students.

The SAHP Award for excellence in teaching and outstanding service to the School of Medicine was given to *Martin M. Lipschutz, Ph.D.*

Medical College of Pennsylvania. *Howard Allen Zaren, M.D.,* has been appointed chief of general surgery.

Athole G. McNeil Jacobi, M.D., Ch.B., Professor and chairman of the department of anesthesiology, has been elected to membership in The Chapel of the Four Chaplains Legion of Honor in recognition of her services to the medical community.

The Alumnae Achievement Award for 1986 has been given to *Ann Catts, M.D.,* Medical Director of Diagnostic Laboratory Services at Queen's Hospital, Honolulu.

On May 31 at its 134th Commencement exercises M.D. degrees were awarded to 118 students and honorary degrees were conferred on *Maurice C. Clifford, M.D.; Seymour S. Kety, M.D.; Ruth H. Bleier, M.D.;* and *Bernard C. Watson, Ph.D.*

Louis F. Rose, D.D.S., M.D., Professor of Medicine and Surgery and chief of the division of dental medicine/surgery, has been named recipient of the 1986 Commonwealth Board Award.

A grant has been received from the Kresge Foundation for the renovation and expansion of facilities and construction of a new pavilion for patient care. A grant has also been received from the National Institute of Mental Health to support a joint clinical research center for the study of psychopathology in the elderly.

Temple University Health Sciences Center. The Center for Environmental Studies of the School of Pharmacy has been given a federal grant running over five years as

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support for its graduate training program in Industrial Hygiene.

Martin Goldberg, M.D., chairman of the Department of Internal Medicine at the University of Cincinnati's Medical Center, has been appointed Dean of the School of Medicine.

The School of Dentistry has named *Stephen Paul McConnell, D.D.S.,* its outstanding alumnus of the year.

John W. Lachman, M.D., Professor and Chairman of Orthopedic Surgery, has been honored as the year's outstanding alumnus of the School of Medicine.

Thomas Jefferson University. *Emanuel Rubin, M.D.,* has been appointed Gonzalo E. Aponte Professor of Pathology and chairman of the department.

The American College of Physicians has appointed *Willis C. Maddrey, M.D.,* Magee Professor of Medicine and chairman of the department, to the Health Care Delivery Subcommittee of the Health and Public Policy Committee.

On June 18, 1986, in the department of radiology, one of the world's largest ultrasound facilities was dedicated. It will be operated under the direction of *Barry B. Goldberg, M.D.,* Professor of Radiology.

Francis E. Rosato, M.D., Samuel D. Gross Professor of Surgery and chairman of the department, has been elected president of the Philadelphia Academy of Surgery.

The appointment of *David C. Levin, M.D.,* as Professor of Radiology and chairman of the department has been announced.

A grant has been received from the Pew Memorial Trust to assist the Jefferson Institute of Molecular Medicine in recruiting teacher-investigators.

Thorir D. Bjornsson, M.D., has been appointed Professor of Medicine and director of the department of clinical pharmacology.

A Javits Neuroscience Investigator award has been given to *Lance L. Simpson, Ph.D.,* Professor of Medicine and director of the division of environmental medicine and toxicology.

Under the direction of *Edward Gottheil, M.D, Ph.D.,* Professor of Psychiatry and Human Behavior, the Thompson 12 Program has been organized, an inpatient unit for the combined treatment of emotional problems arising from drug and alcohol dependency.

Gerard J. McGarrity, Ph.D., adjunct professor of microbiology, has been given the Distinguished Alumnus Award of the College of Graduate Studies.

University of Pennsylvania Health Institutions. The Surgical Research Laboratories were named in honor of *Brooke Roberts, M.D.,* Emeritus Professor of Surgery. The facilities were made available through funds from the Pew Memorial Trust.

Working jointly with Biolectron, Inc., *Carl T. Brighton, M.D.,* Professor of Bone and Joint Surgery, and *Solomon Pollack, Ph.D.,* Associate

Dean of Penn's School of Engineering and Applied Science, are developing a new, noninvasive technique for the treatment of nonunion bone fractures.

R. Bruce Heppenstall, M.D., Professor of Orthopedic Surgery, has been honored with the Kappa Delta Research Award of the American Academy of Orthopedic Surgeons and the Orthopedic Research Society.

The National Kidney Foundation has given its 1985 Distinguished Service Award to *Zalman S. Agus, M.D.,* Associate Professor of Medicine.

Funded by a grant from the Charles A. Dana Foundation, Dana Fellowships for advanced research have been announced by the David Mahoney Institute of Neurological Sciences.

Edward J. Stemmler, M.D., Dean of the School of Medicine, has been elected to the Institute of Medicine of the National Academy of Sciences.

But this is an inquisitive age, and if we insist on piling up beyond a certain height knowledge which is in itself mere trash and lumber to a man whose life is to be one long fight with death and disease, there will be some sharp questions asked by and by, and our quick-witted people will perhaps find they can get along as well without the professor's cap as without the bishop's mitre and the monarch's crown.

Oliver Wendell Holmes
Medical Essays 1842-1882
Houghton, Mifflin and Company,
Boston and New York, 1891, p. 291

NLM Visiting Historical Scholar Program

The National Library of Medicine plans to select one (1) scholar to engage in research and staff consultation during the 1987-88 season. Applications are now invited from individuals interested in spending from 6 to 12 months at the Library between September 1, 1987 and August 31, 1988. Detailed announcements and application forms may be obtained from the Chief, History of Medicine Division, National Library of Medicine, 8600 Rockville Pike, Bethesda, Maryland 20894. Telephone (301) 496-5405. The closing date is February 1, 1987.

TRANSACTIONS & STUDIES

of

THE COLLEGE OF PHYSICIANS
OF PHILADELPHIA

MEDICINE & HISTORY

Series V Volume VIII Nº 4 December 1986

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THE COLLEGE OF PHYSICIANS
OF PHILADELPHIA

MEDICINE & HISTORY

Series V Volume VIII No 4 December 1986

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ISSN 0010–1087

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Authors should submit two copies, typed on one side of 8½ × 11 inch paper; all material, including quotations and references, should be double-spaced. A short summary of the paper should also be included. *Transactions & Studies* accepts either footnotes or references, but either must be in accordance with the guidelines in *A Manual of Style* (Chicago: University of Chicago Press, 1969), 12th edition. Prospective authors are encouraged to examine back issues of *Transactions & Studies* to familiarize themselves with the format of the journal.

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Transactions & Studies of the College of Physicians of Philadelphia (ISSN 0010 – 1087) is published four times a year (March, June, September, December) by the College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, PA 19103. Second-class postage paid at Philadelphia, PA 19104. POSTMASTER: Send address changes to *Transactions & Studies of the College of Physicians of Philadelphia*, 19 South 22nd Street, Philadelphia, PA 19103.

Subscription correspondence should be sent to Publications Manager, *Transactions & Studies,* The College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, PA 19103. Subscriptions, U.S.A. and Canada $30.00, foreign $34.00. Single copies $9.00.

Transactions & Studies of the College of Physicians of Philadelphia is indexed in *Biological Abstracts, Chemical Abstracts,* and *Index Medicus.*

MEDICINE AND HISTORY

The Impact of Computed Tomography and Magnetic Resonance on Diagnostic Medical Imaging
GLENN FORBES 215

Joseph Pancoast (1805–1882): Jefferson Anatomist and Surgeon, and His World
SAMUEL X. RADBILL 233

Thomas Hewson Bache: A Forgotten Fellow of the College of Physicians of Philadelphia
THOMAS A. HORROCKS 247

REVIEWS

BRADFORD, HARRY F., *Chemical Neurobiology: An Introduction to Neurochemistry*
Reviewed by John M. Bertoni 255

JEANNEROD, MARC, *The Brain Machine*
Reviewed by Richard M. Restak 258

WEISSMANN, GERALD, *The Woods Hole Cantata: Essays on Science and Society*
Reviewed by Arthur J. Boucot 261

CHASE, DEBORAH, *Dying at Home with Hospice*
Reviewed by Patricia Inch and Patricia Wells 263

MEMOIRS

Helen Brooke Taussig
(1898–1986)
HERBERT J. DIETRICH, JR. 265

Joseph M. F. Hughes
(1905–1986)
J. MARTIN MYERS, JR. 272

George Allen Hahn
(1911–1986)
J. EDWARD LYNCH 275

DEPARTMENT OF RETROSPECTION

The Jefferson Medical College Connection: A Letter from Sir William Osler
FREDERICK B. WAGNER, JR. 277

ACADEMIA 283

INDEX 287

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Acknowledgments

The publication of *Transactions & Studies of the College of Physicians of Philadelphia* is made possible through the generosity of:

The M. Louise Carpenter Gloeckner Memorial Fund
The Morris Feld Memorial Fund
The Benjamin and Mary Siddons Measey Foundation

The Impact of Computed Tomography and Magnetic Resonance on Diagnostic Medical Imaging

GLENN FORBES

New trends in medicine have always stimulated general interest, and two notable advances have been made during the past decade by improvements in diagnostic imaging. The advent of the computer has touched many areas in medicine, but nowhere has the impact been so keen as in the modification of the diagnostic image. The changes have been technically sophisticated, frustratingly expensive in the short run, and yet thorough in their scope because now most medical establishments have access to some form of computerized scanning. The effect has been pervasive, and litigation has followed when patients have not been referred to facilities with computerized scanning. These innovations also eventually affect methods of treatment. To understand how and why such trends occurred, one must go back to earlier days.

By the 1960s more than half a century of effort in the roentgenographic field had produced an organized, stable, relatively well-understood system applied to diagnosis. Every hospital had a radiology or "X-ray" department that consisted of one or more radiographic machines, perhaps a procedure room, a film-processing area and, if possible, a staff of at least one physician who specialized in diagnostic radiology. The "menu" of examinations was limited, and physicians knew what type of roentgenogram to order. Although dynamic personalities might have chosen other, more glamorous fields, most radiologists were content with their behind-the-scenes role and, like the pathologists of the day, their stereotype as perceived by their clinical colleagues was something between an intellectually curious college professor and a service-oriented hospital administrator. Then the prototype of a new device was developed in the United Kingdom that was called a computerized tomography scanner or, as it has been commonly called, a CT scanner.[1] The first operational unit in North America was installed at the Mayo Clinic in June 1973 and the second unit at the Massachusetts General Hospital later that year.

The CT Scanner

The CT scanner is an X-ray machine that produces on a television

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 215-231.
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monitor a cross-sectional image that is then reproduced on film. Mathematical formulas calculate very slight differences in the absorption coefficients of different tissues to an X-ray beam in a single plane, usually transverse, that passes through the body from several directions about the longitudinal axis *(Fig. 1)*. The numerous equations

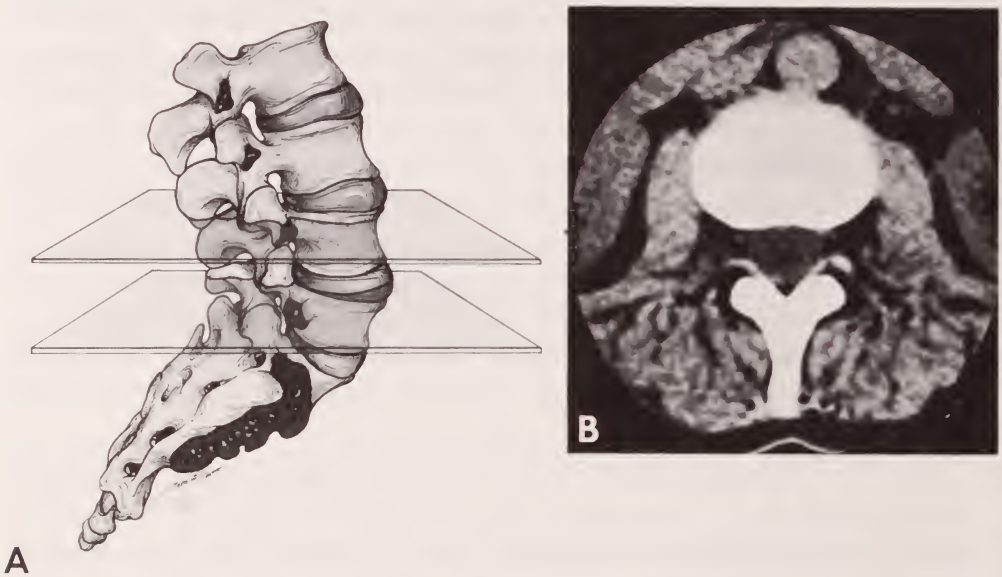

Figure 1. Technique of CT. *A.* Transverse slices perpendicular to the body axis are customarily obtained through the area of interest. *B.* Transverse scan through the spine demonstrates soft tissue structures in paraspinal-intraspinal canal regions.

involved require the use of a computer, and many modifications have been made to refine this technique so that an image can now be obtained with greater detail in less time. The earliest units required a water bag to be placed around the head, took four and a half minutes to obtain data for each cross section and used an 80 by 80 data bit matrix. Newer equipment completes a slice in two to ten seconds with much higher spatial resolution. It generally takes 30 to 45 minutes to examine a patient. If the time needed for the positioning and image processing is considered, a work load of ten to fifteen examinations a day is customary.

The advantage of CT lay in its precision rather than serving as merely another example of new technological advances. The physical characteristics of tissue displayed were the same as those displayed in standard radiography, except that now they were displayed with much

greater sensitivity and thus provided more information. In radiography, an X-ray beam is passed through the body, and its degree of attenuation by tissue is represented by black or white on film. In computed X-ray scanning, the same X-ray beam is passed through the patient but is recorded by special electronic detectors integrated with a computer rather than by film. Because the computer electronically enhances contrast, more information related to tissue structure and anatomy is displayed on the final image. Details of the soft tissues of the brain, chest, abdomen and extremities that were not visualized by conventional methods could now be seen in good detail.

At first, images of moving structures such as the lung, diaphragm and abdomen were flawed by long scanning times of fifty or more seconds; but as the acquisition times were shortened, the blurring caused by motion decreased. Current scanners acquire the data in from three to ten seconds. The increased information yielded by CT came from an image that not only contained greater contrast but also depicted soft tissues in a new projection. The image as a cross section of the body led to a new perspective in interpreting anatomy. Cross-sectional anatomy had been a forgotten art; ironically, one of the first items to be resurrected in the medical computer age was an atlas of cross-sectional axial anatomy first published early in the twentieth century.[2] A brief controversy even arose between neurosurgeons and general surgeons as to whether one should consider cross sections as a view down the body (as a neurosurgeon approaches the head) or up the body (as a general surgeon approaches the abdomen). This argument was largely decided by commercial manufacturers, who saw a greater potential for sales to those who look up the body and who standardized the labeling as such.

Cost

The increase in information provided by CT did not come without cost. The first CT scanners were purchased for a few hundred thousand dollars in the mid-1970s, and the cost of scanners later increased to more than $1 million. The instruments were operated by one or two specially trained radiological technologists under the supervision of a radiologist and required sophisticated engineering, electrical and computer service support. These factors brought the price of a CT examination into the range of several hundred dollars in the mid-1970s, a cost that exceeded most standard roentgenograms and rivaled that

of invasive procedures such as angiography and pneumoencephalography. When a CT study replaced other costly or invasive tests such as these, their expense was accepted, but when it was added as a complementary study, often combined with angiography, the additional expense came under close scrutiny.

During the mid to late 1970s considerable stress was placed on hospitals and physician groups as a result of rapid changes in technology; advances in equipment design and hardware occurred at a faster and costlier rate than the purchaser and user could comfortably handle. And while improvements in scanner technology seemed to occur every six to nine months, the delivery time for purchased units was often just as long, and it was possible for a new million-dollar instrument, on installation, to be already considered obsolete or at least less than "state of the art." Similarly, scientific publications that reported findings based on one type of imaging technology were quickly superseded by work based on more advanced instrumentation.

The late 1970s also brought early concerns about the rising medical health-care costs borne by third-party payers and government officials who saw no limit to the potential increase of medical expense. Legislation was enacted to put a ceiling on the technological explosion brought about by expensive medical imaging equipment. Certificates of need were required for radiographic equipment that cost in excess of $100,000, which, even in the 1970s, included almost all equipment. Guidelines were established for use of CT scanners in terms of annual patient use and indications for examinations.

Despite legislative constraints, the proliferation of CT scanners continued across the United States. The pressure was too great on hospitals and physician groups to have this imaging capability available. For neurological disease, CT had eliminated pneumoencephalography, changed the indication for arteriography, decreased conventional skull roentgenography and was beginning to encroach on myelography. For thoracic and abdominal disease, CT was reducing certain forms of angiography, complemented several other imaging examinations and was credited with decreasing the number of exploratory laparotomies. Numerous attempts were made to quantify these diagnostic changes in terms of cost effectiveness, but whether more or less expense was incurred in diagnosis probably mattered little because the total impact of this form of imaging was too formidable to suppress.

In neurological disease the early detection and assessment of brain

tumors was radically improved with CT scanning. Detection of hemorrhage and strokes, hematomas after trauma, structural abnormalities in pediatric disorders, masses in the orbit and sinus and pressure of hydrocephalus became the domain of CT examination of the head. In the early 1980s CT began to complement myelography for the study of a wide variety of spinal disorders. Within a few years of its introduction, access to this imaging technique was acknowledged as a necessary component of any neurosurgical practice in the United States.[3]

For diseases of the thorax and abdomen, CT initially was hampered by its long data acquisition time relative to heart, lung and bowel motion. When scanning times decreased to the range of ten to twenty seconds, breath-holding during a scanning slice dramatically improved organ images in the genitourinary system, pelvis, liver, spleen, pancreas and chest. Needle biopsy and placement of drainage tubes with CT guidance became part of the new emerging field of interventional radiology.

A comprehensive survey after CT was established, but before the development of magnetic resonance, reported that head examinations accounted for 65 percent of CT examinations and studies of the abdomen and pelvis accounted for 68 percent of those remaining. On the average, each CT unit performed sixty-two patient procedures in a 56-hour week at 90 percent capacity.[4]

Magnetic Resonance Imaging

At this point the role of computer scanning in diagnostic imaging might normally have begun to reach a plateau. But another technological breakthrough had been in the making and, although in retrospect the trend could have been observed years before, only a surprisingly small number of people had correctly anticipated its significance. In 1981 early reports of clinical studies on humans using nuclear magnetic resonance (NMR) techniques came once again from the United Kingdom.[5]

The phenomenon of NMR had had a steadily widening application in chemistry and physics. Early investigations were restricted to small laboratory samples. Tumor detection in small animals during the early 1970s led to methods of image production using approaches similar to back projection reconstruction algorithms used in conventional X-ray transmission scanning (CT).[6,7] Because the technique was used

to produce images of the distribution of magnetic resonance properties throughout large structures, including the human body, the term "magnetic resonance imaging" (MRI) came into use. MR images of the hydrogen nucleus are produced in virtually any section of the body and in any plane of display. No ionizing radiant energy is used and, with specific exceptions, MRI has no apparent health hazard. The technique has already replaced some methods of diagnostic imaging and promises to complement others.

When an object is placed in a magnetic field, atomic nuclei possessing a magnetic moment are aligned. Incident electromagnetic energy at a specific frequency related to the magnetic field strength can then be absorbed by the nuclei in a condition of resonance and then re-emitted in the form of electromagnetic radiation of the same frequency. The re-emission signal may be measured and is picked up by a radio receiver that is then coupled with a computer to form an image based on the different types of signals. The intensity of the emitted radio signal is dependent on the chemical and physical characteristics of the substance.

To produce an MR image, one needs a large magnet capable of producing a homogeneous field, a transmitting and a receiving radio coil, a computer to process the signals and create a digital image, and equipment to display and record several images. Such facilities require sophisticated engineering and costly housing conditions, mainly to accommodate the magnet, which may use supercooled liquid gases, weigh several tons and have deleterious effects on electrical equipment within a range of several meters. Because of technological and housing requirements, changes in building structure are often necessary and installation of MRI systems has largely been limited to major medical centers, large hospitals and corporate partnership groups.

The heart of the MRI system is the magnet. Most of the designs and capabilities of a system are based on the type of magnet and the magnetic field it produces. Magnets are designed to operate at a particular field strength and are designed to produce a field homogeneity that is measurable to within several parts per million. Problems of radio frequency attenuation within the body, magnet technology and chemical factors make the hydrogen proton the natural choice of nucleus, and magnetic fields for medical imaging generally range from 0.15 to 1.5 tesla (1 tesla equals 10,000 gauss; the earth's magnetic field is about 0.6 gauss). The most commonly used magnets have a super-

conducting design consisting of a current passing continuously through wire coils with a negligible electrical resistance obtained at very low temperatures achieved with liquid nitrogen and liquid helium.

The emitted radio signals that are used in MRI to produce an image are largely based on four tissue factors. These are: tissue density (for example, bone versus muscle), tissue movement (flowing blood versus a stationary organ) and two factors that relate to nuclear structure and the molecular environment, called T1 and T2 relaxation times. Standard diagnostic roentgenography, including CT scanning, is based on tissue density. Thus, the richness of the MRI technique lies in the greater amount of information that is contained in the signal used to create an image. By varying the timing and nature of the incoming radio wave that stimulates the tissue, different tissue factors may be emphasized in the emitted signal. Present MRI systems use several different pulse sequences to create images based on tissue density, states of hydration and states of blood flow *(Fig. 2)*.

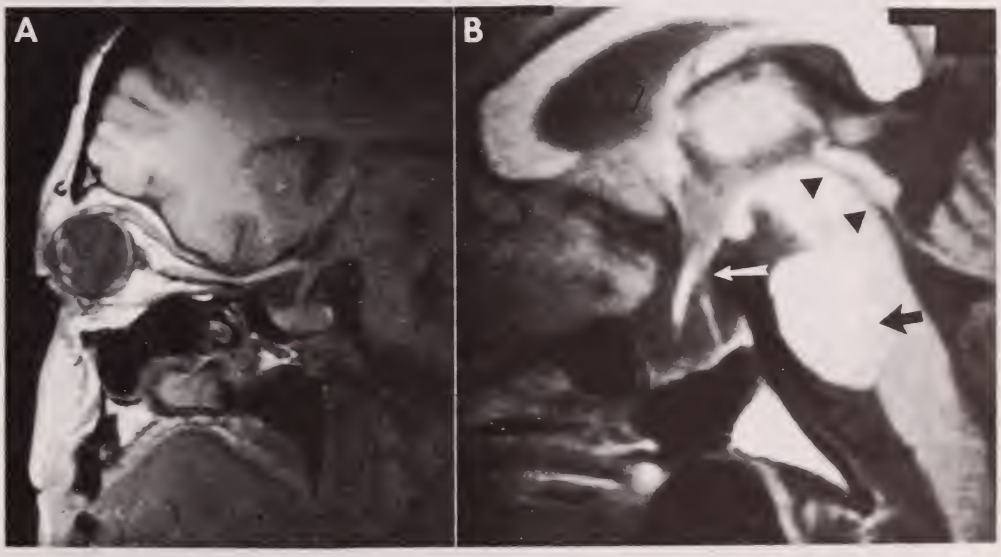

Figure 2. Technique of MRI. *A.* MR images may be obtained in any plane by rotating the magnetic field. A slice parallel to the orbit muscle cone axis demonstrates the course of the optic nerve from the globe to the chiasm and also other orbital and sellar structures. *B.* A high-resolution MR midline image demonstrates many soft tissue structures that were previously viewed with *in vivo* imaging. *Black arrow,* pons; *black arrowheads,* aqueduct; *white arrow,* optic and infundibular recesses of the third ventricle; *open black arrow,* corpus callosum.

Once a signal is produced in an MRI system, there are several approaches to creating an image. The magnetic field is mapped in such a way that it becomes position dependent so that signals can be identified as arising from certain regions within a subject. Two concepts have generally been used to plot these position-dependent signals in such a way that an image is created: (1) projection-reconstruction techniques and (2) three-dimensional Fourier transform techniques, which are most widely used in present systems. A tomogram is produced that is essentially an image representing a slice of the object under consideration. Several slices are examined, much as one would examine a loaf of bread by looking at its individual slices. By changing the orientation of the magnetic field, the image slices may be produced in any direction; that is, looking from the front, the side or top to bottom, medically referred to as coronal, sagittal or transverse orientation *(Figs. 3 and 4).*

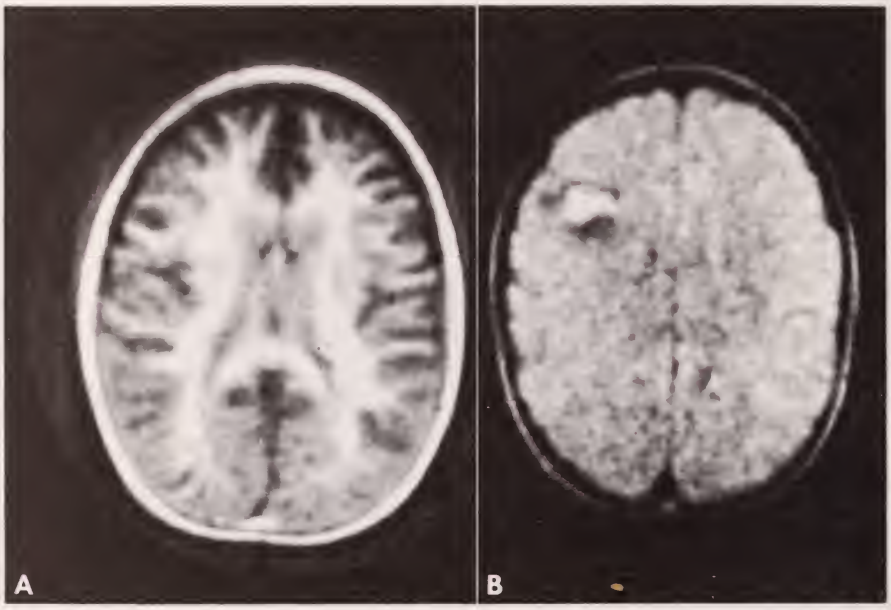

Figure 3. MR flexibility. Different aspects of tissue may be demonstrated by changing the method of radio frequency stimulation. A pulse sequence that emphasizes T1 relaxation demonstrates greater anatomic detail *(A),* whereas another pulse sequence through the same region *(B)* demonstrates the lesion by emphasizing differences in hydration states with T2 relaxation.

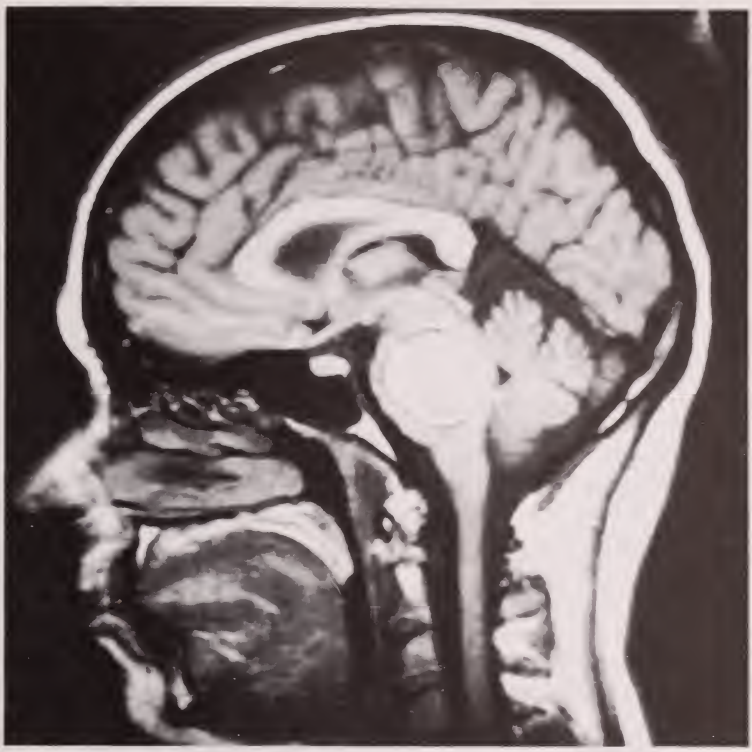

Figure 4. MR specificity. This image demonstrates how certain lesions may be characterized by their MR signal changes. The white (high intensity) signal from the pontine mass on this particular radio frequency is characteristic of subacute or chronic hemorrhage, and the thin dark line surrounding the lesion represents iron-laden hemosiderin within macrophages from the chronic slow leakage of capillary blood. Stereotactic biopsy showed hemorrhage from profuse capillary telangiectasia or cryptic arteriovenous malformation.

The management of a patient for MRI is similar to that for CT scanning. He or she lies on a table within a tubelike magnet gantry for periods of from twenty to more than sixty minutes, depending on the number of views obtained. Although most people find this a relatively comfortable examination, a few experience claustrophobia that interferes with the study. When the additional time needed for computer processing and image recording is included, most MRI sites reach a practical capacity of eight to twelve examinations a day.

Advantages of MRI

The most significant impact of MRI has been on the study of the central nervous system. It has shown clear superiority over conventional CT scanning for the early detection of white matter abnormal-

ities and edema of any source, including white matter diseases such as multiple sclerosis, developmental lesions of myelination and edema secondary to infarct, cerebritis and tumor. The fact that even the smallest change in tissue structure or hydration may affect the MR signal has led some investigators to consider the major benefit of the technique to be increased sensitivity rather than specificity for diagnosis. It has achieved superiority for differentiating between gray and white matter, permitting small gray nuclei within the brain stem to be easily identified. Absence of artifact from bone has made MRI more successful than CT techniques for evaluating posterior fossa lesions. Brain metastases and low-grade primary brain tumors have been detected earlier than was previously the case. The spatial resolution of the latest scanners is considered by many to be superior in the orbit, sella and skull base in addition to the brain. It is the method of choice for evaluating the cranial vertebral junction. Although hemorrhage can be not only detected but also characterized in terms of age, the need for subject immobility for somewhat longer periods than that required for CT has somewhat hindered the role of MRI for trauma and acute stroke.

The high anatomic detail, ease of imaging in multiple planes and ability to examine a long segment in the sagittal plane are making MRI particularly useful for study of the spine and spinal cord. The high natural contrast between the spinal cord and cerebral spinal fluid obviates the need for intrathecal administration of contrast material. MRI has been shown to be highly effective for the demonstration of syringomyelia, Arnold-Chiari malformation and many spinal cord tumors. Preliminary investigations with high-resolution techniques using specifically designed surface coils have demonstrated disc protrusions and degenerative changes in the spine that in some cases were not evident with conventional myelography or CT. MRI may well play a crucial role in spinal imaging diagnosis as the techniques are improved and standardized *(Fig. 5)*.

Evaluation of musculoskeletal diseases is a less frequently used but important new indication for MRI. This includes tumors in the soft tissues, the bones of extremities, and ligaments and tendons in the joints. Examination of the chest and abdominal organs with MRI has been more difficult because of respiratory motion, cardiac motion and bowel peristalsis, but it has shown great promise in the mediastinum, pelvis and retroperitoneal regions.[8]

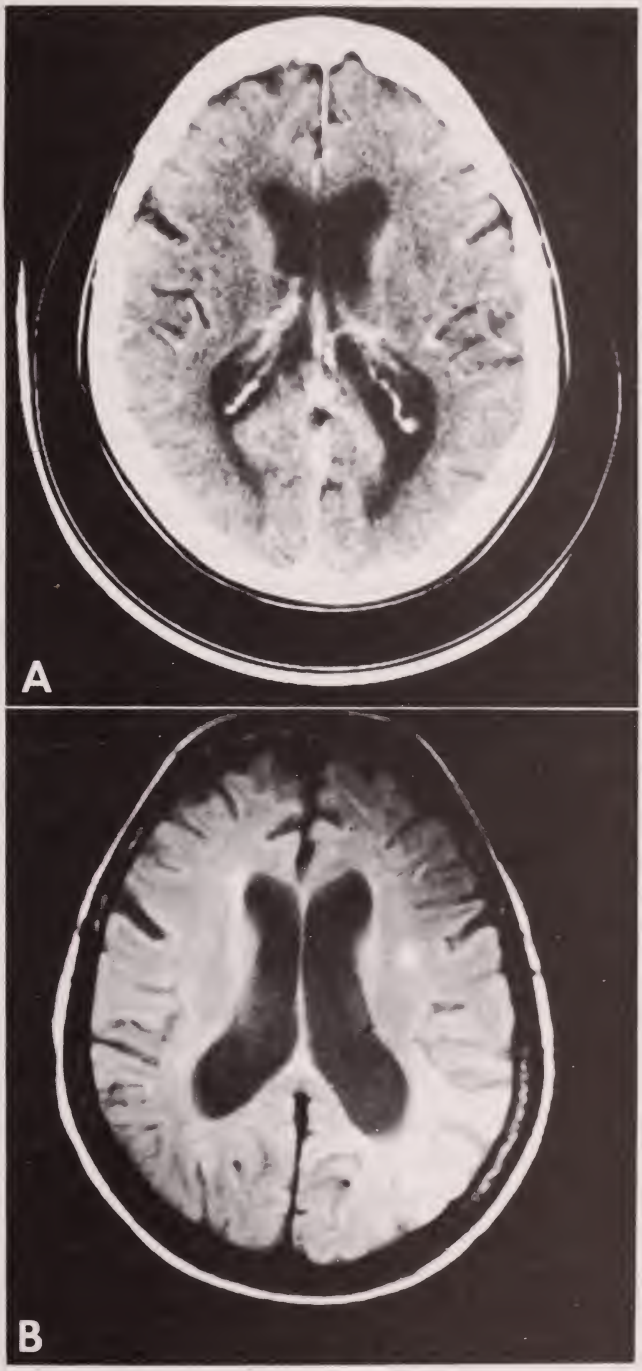

Figure 5. MR sensitivity. *A.* CT scan shows little parenchymal abnormality of the brain. *B.* Certain typical pulse sequences in MRI, such as this T2-weighted image (in the same patient), are extremely sensitive in detecting small areas of tissue change — in this case, probably a small region of ischemia or infarction in the deep parietal lobe.

The American College of Radiology recently released the results of a two-year study of MRI undertaken by the subcommittee on current evaluation of MRI. It reports the consensus of radiologists, other physicians and scientists who were members of the commission and who are informed investigators in the field. The report states that clinical applications in MR proton imaging have been—and continue to be—in a state of evolution. During the two-year study period, specific clinical applications increased rapidly, and this trend is expected to continue. It was the committee's major recommendation that MR proton imaging be recognized as a standard method for the diagnosis of human disease and that physicians should be free to choose among various imaging techniques on the basis of specific indications. Current clinical applications, recognized in order of decreasing frequency, were neurologic diseases, including brain and spinal cord lesions and diseases of the neck and orbit; musculoskeletal diseases, including bone and soft tissue tumors, soft tissue trauma, infection and osteonecrosis; pelvic disorders, including genitourinary malignancy; abdominal conditions, including neoplasms that are poorly defined on CT or ultrasound; major vascular structures; metabolic diseases; and chest conditions, including hilar and mediastinal masses, cardiac mass lesions and congenital cardiac diseases. Future investigative work was recognized as being directed toward the application of spectroscopy to *in vivo* tissue studies, the integration of imaging with spectroscopy for clinical work, software modification of pulse sequences for greater utility and efficacy, and blood flow analysis.

MRI has proved to be a safe diagnostic method when performed by qualified users in an appropriate medical environment. In several years' experience involving thousands of scans, no ill effects have been attributed to proper MRI operation under specific guidelines. Because the technique involves new application of magnetic fields and radio frequency energy, a conservative approach has been adopted. Safety guidelines were established by the Food and Drug Administration (FDA) for patient studies and magnetic fringe field strength for noncontrolled areas. The same agency has imposed guidelines for occupational workers and for patient conditions relating to magnetic fields and to radio frequency power deposition in the human body. These are well known to radiologists. In addition, for situations in which a commercial MRI unit does not have FDA approval, operation of the unit requires approval by the institution's review board. MRI imposes

three different physical fields on patients: static magnetic, changing magnetic and radio frequency stimulation. At present the FDA limits for these fields are those used for occupational workers in radar and high-field electromagnetic industry. They may be changed in the future.

Safeguards

For the safe use of MRI, the following considerations should be kept in mind. (1) Patients with implanted cardiac or breathing pacemakers must be excluded from having MRI and from the scanner areas because of danger to the devices in a magnetic field. (2) Metal implants, including vascular surgical clips and prosthetic joints, are of some concern. Specific cases are best handled through judgments by the examining physicians. (3) Near the fringe magnetic field, metal objects, including life-support equipment, may become a hazard. (4) Although not considered a medical hazard, claustrophobia resulting from confinement within the scanner tunnel has been a problem for a few patients, and in such cases supervision is required. (5) When the MRI site is planned, the handling of emergencies such as patient resuscitation must be considered. With attention to these conditions, MRI should continue to be a noninvasive diagnostic test with minimal risk.

Economics

At this time MRI devices are still costly to purchase, install, maintain and operate. The level of optimal field strength remains controversial. Superconducting magnets that are required to produce stronger magnetic fields are more expensive to purchase but have operating costs similar to those of resistive systems. Permanent magnets are less expensive but produce weaker magnetic fields. The total cost of an MRI system, equipment and facilities, including building and site preparation, ranges from about $1.7 to $3.5 million depending on certain factors. Annual operating costs, excluding amortization of capital equipment and building, range from $0.25 to $1.0 million. When annual equipment and building costs are included, the total annual costs vary from $0.7 to $1.5 million, assuming a depreciation over 5 years and an annual interest rate of 15 percent.

At present the trend is toward superconducting magnet systems. If the yearly case load is 2,000 examinations per year (eight per day), the average cost per scan is between $600 and $800 with a typical

superconducting magnet with a medium field strength. If the schedule can be increased to 3,000 scans per year (or twelve per day), the cost per scan ranges from $400 to $500. Currently, long-term operation of ten examinations (the full range of all hospital and ambulatory types of studies) per ten-hour day (not including maintenance and downtime) is considered the maximum achievable. These cost estimates do not include professional charges or partial collection of billing and are thus somewhat low estimates that cannot be directly compared with CT charges. The improvement in the quality of diagnosis and the absence of ionizing radiation associated with MRI may make the relatively higher charges more acceptable in clinical work.

MRI vs. CT

With the introduction of MRI scanners in clinical settings, comparisons with CT were natural. With MRI no ionizing radiation is used, a broader spectrum of image contrast has produced greater sensitivity for detection of abnormality, flexibility in using different pulse sequences has produced higher specificity for recognizing some lesions and the ease in producing displays in different projections has been found to be of great clinical usefulness. MRI has several inherent disadvantages, however, including longer data acquisition times that create difficulty for imaging the body, inability to directly visualize tissues devoid of mobile hydrogen nuclei (such as calcium in cortical bone), contraindications for patients with pacemakers or claustrophobia, and the technical complexity of installation and operation that leads to less availability and higher cost.

Many investigators believe that because MRI arose in the shadows of CT imaging during an uncertain economic era, it must do more than merely produce anatomic images that rival or even surpass CT in diagnostic value. It must also be cost effective. Others believe that, had the tables been reversed and CT introduced years after MRI had been established as a computed scanning imaging examination, CT would have been accepted as a less costly complementary tool that helped in some areas but would never rival MRI for total overall usefulness. Ultimately a balance may well be achieved in which both types of scanning are available. To what extent MRI replaces CT in other areas during the next few years rests on both technical advances overcoming problems with body imaging and improvements in efficiency to make it more cost effective. The technology remains in a

state of evolution, and considerable changes in magnet design and computer processing techniques are still occurring.

MRI has been added to the medical imaging armamentarium with alacrity. It has already fulfilled its promise as a useful clinical tool for certain specific problems. Changes in technology during the next few years may make it more cost effective. Patient safety has not been a problem provided appropriate guidelines are followed. Further clinical studies will provide the crucial data regarding optimal magnet type and strength and imaging sequences. The financial constraints seem surmountable provided appropriate patient selection and optimal throughput for each unit are achieved. Education is crucial to its logical and appropriate introduction into the medical care system.

When one looks back at the implementation of computed scanning during the past fifteen years, two things become apparent. First, computed scanning, whether with X ray or magnetic resonance, has had a profound effect on improving and even increasing the role of imaging for medical diagnosis. Second, we are in only the early to middle phase of the computerization of the medical diagnostic image. Hardly a single examination performed in today's radiology departments has an informational data base that cannot be placed in digital form, allowing it to be processed, manipulated, transported and stored by various computer techniques. Such examinations include CT and MRI scanning, together with angiography and isotope scanning, ultrasonography and even standard X-ray radiography. The use of computer enhancement for television-scanned images in the robot spacecraft program has given some indication of the potential for similar image manipulation and transmission for medical purposes. Individually tailored computer examinations, networks of transmitted images between hospitals, linkage with large information data bases for consultation — all these and more seem only fanciful ideas until one recognizes that somewhat similar applications already exist in other fields. The future, in short, is filled with fascinating prospects.

Summary

Two tools of extraordinary ingenuity, the Computerized Tomography Scanner (CT) and the Magnetic Resonance Imager (MRI), now provide us with conspicuously improved specificity in tissue diagnosis at some increase in cost. The comparative advantages of each of these are still under study and may, to some degree, be affected by consid-

erations of economy.

CT scanning, achieved through the use of X rays, yields clinical information in a similar though more refined manner than conventional radiography. It is useful for demonstrating brain tumors, hitherto undetectable, strokes, hematomas, and cranial and abdominal masses.

MRI has the advantage of providing clearer information of structure and function without the use of X rays or contrast material. Its high cost of purchase and maintenance can be reduced, or at least controlled, by diligent selection of patients thought to require it. It promises a specificity up to now unimagined for the diagnosis of neurological and musculoskeletal disorders, soft tissue, metabolic and vascular disease and, perhaps very soon, it will be the imaging method of choice in other situations as well.

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In our study of anatomy there is a mass of mysterious philosophy, and such as reduced the very heathens to divinity; yet amongst all those rare discoveries and curious pieces I find in the fabric of man I do not so much content myself as in that I find not; that is, no organ or proper instrument for the rational soul. For in the brain, which we term the seat of reason, there is not any thing of moment more than I can discover in the cranie of a beast: and this is a sensible and no inconsiderable argument of the inorganity of the soul, at least in that sense we usually so receive it. Thus are we men, and we know not how; there is something in us that can be without us, and will be after us. . . .

Sir Thomas Browne. *Religio Medici,* page 45. Cambridge University Press, 1963.

Joseph Pancoast (1805-1882): Jefferson Anatomist and Surgeon, and His World

SAMUEL X. RADBILL

Cherished by many as a successful teacher and a personal friend, and exerting a strong influence on the advancement of surgery, Joseph Pancoast was overshadowed by his more prominent colleague, Samuel David Gross. Nevertheless, he deserves to be brought out of the shadow because of his considerable contributions to modern surgery.

In the year Joseph Pancoast was born, 1805, Philip Syng Physick, surgeon to the Pennsylvania Hospital, was elected Professor of Surgery at the University of Pennsylvania, the first to occupy an independent chair of surgery in this country. Two years later his nephew, John Syng Dorsey, joined him as adjunct professor. George McClellan, nine years older than Pancoast, was one of Dorsey's pupils in 1817. When McClellan, founder of the Jefferson Medical College, was eased out of his chair as Professor of Surgery in 1838, he was at the zenith of his career, popular as a teacher, with a lucrative following of 360 pupils. A man of genius, McClellan had, however, many personality defects. In the distinguished coterie of Philadelphia physicians, he was on bad terms with nearly everyone. He was impulsive and contentious, with many enemies, especially at the rival medical school of the University of Pennsylvania.

Robley Dunglison joined the Jefferson faculty in 1836. There had always been competitive animosity between Jefferson and the University of Pennsylvania, which was intensified in 1831 when Granville Sharpe Pattison came to Jefferson. Pattison, feuding with Nathaniel Chapman, the professor of medicine at Pennsylvania, shot Chapman's brother-in-law, General Thomas Cadwalader, in a duel and incurred the animosity of practically all the Philadelphia professional elite, a hostility directed against the Jefferson Medical College to such a degree that when Dunglison arrived he found himself persona non grata in the Chapman cohort. He soon discovered that there were two incompatible cliques in the Jefferson faculty; one consisted of George

Presented at the Thomas Jefferson University Seminar on the History of Medicine on May 21, 1986.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 233-245.
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McClellan, his brother Samuel McClellan and Samuel Colhoun; the other of Pattison, John Revere and Jacob Green. Dunglison was caught in the middle. In the ensuing squabble the Jefferson Board of Trustees in 1838 dropped George McClellan and replaced him in the chair of surgery with Pancoast.

The disruption of the faculty in 1838 led to a painful drop in student enrollment, so that three years later Pattison and Revere moved to a more promising field in New York City. In 1841 the faculty was reorganized again, with Pancoast releasing the chair of surgery to his friend, Thomas Dent Mütter, and taking the chair of anatomy.

So now, in addition to Dunglison, the new faculty consisted of Robert M. Huston, Pancoast, John K. Mitchell, Mütter, C. D. Meigs and Franklin Bache, all socially, as well as professionally, acceptable in Philadelphia. Handpicked, I suspect, by Dunglison, and with McClellan and Pattison comfortably gone, Dunglison set about to act as peacemaker not only within his own faculty but also between Penn and Jefferson. The golden age of Jefferson Medical College began and, until the coming of Samuel D. Gross, no one contributed more to enhance the renown of Jefferson than did Joseph Pancoast. The school became such a mecca for medical students that by 1854 it attracted a class of over 600.

Early Career

Thirty-three years of age and ten years out of medical school, Pancoast in 1838 had already built a student following in private medical schools of Philadelphia and was in high repute as a surgeon. The dissecting room was the time-honored gateway to surgical reputations, and in his lectures at the Philadelphia Anatomical Rooms Pancoast inspired his young audiences with flowery language, emphasizing that they must master anatomy and physiology thoroughly to become effective doctors and surgeons.

There were two institutions among the several private medical schools in Philadelphia with which he identified himself at that time. Nathaniel Chapman in 1817 had opened a private school on the second floor of the stable in the rear of his home, which soon became known as the Medical Institute. First, William Horner joined Chapman there as anatomist; next, William Potts Dewees as obstetrician; after that came John Bell, Thomas Harris, Samuel Jackson and John K. Mitchell. About ten years later a charter was obtained and a building

erected with three lecture rooms. In addition to the lectures, examinations were conducted, from which the famous quiz classes, first organized by Dr. Mütter, developed.

The success of these extramural schools prompted others to follow suit. In 1818 Joseph Parrish opened one with thirty students, engaging George B. Wood as his associate. This school became the Philadelphia Association for Medical Instruction in 1830 and included Pancoast on its faculty. In 1820 Jason V. O. Lawrence opened the Philadelphia Anatomical Rooms, eventually known as the Philadelphia School of Anatomy. When Lawrence died in 1823, it was taken over by John D. Godman. He left in 1826 and James Webster carried it along until 1830, when it lapsed for a time. Then in 1831 Joseph Pancoast reopened it and ran the school until he moved to Jefferson eight years later. Thus, at twenty-five, Pancoast began his career as a medical instructor, three years after being graduated in 1828 from the University Medical School.

In 1821 McClellan had opened *his* private school on Walnut Street, which became the Jefferson Medical College. In 1822 another extramural medical school opened on Library Street next to the old Custom House alongside the present library of the American Philosophical Society. Hewson, Harris, Meigs and Bache lectured there. Many brilliant men were connected with the Philadelphia School of Anatomy, which Pancoast resurrected in 1831. All these schools served as nurseries for medical teachers.

In 1834 Pancoast, in his introduction to the course of anatomy at the Philadelphia Association for Medical Instruction in the Philadelphia Anatomical Rooms, outlined the history of his subject, dividing it into general, comparative and special categories. "To surgery," he explained, "anatomy is the touch, the eye and the hand." He did not envision the X ray or the other technical aids with which a surgeon is now blessed. He derided the laryngoscope, saying that he could accomplish in a twinkling what it took the Viennese laryngoscopists repeated efforts to do, and at the same time he could avoid the irreversible damage they inflicted. Before anesthesia, speed in surgery was of great benefit.

Philadelphia Hospital and Children's Hospital

As attending physician at the Philadelphia Hospital (Blockley), and chief physician to the Children's Hospital affiliated with that institu-

tion, Pancoast used the connection as a forum for clinical classes in surgery. He and his son, William H. Pancoast, with other Jefferson luminaries such as McClellan, the Grosses (father and son), Jacob Mendez DaCosta and John Chalmers DaCosta, all taught there. When the reorganization of 1841 took place at Jefferson, Pancoast arranged for Robley Dunglison to join him in lecturing to the Jefferson students at the Philadelphia Hospital on different days from the professors of the University of Pennsylvania.

In 1839 Pancoast, on introducing his course in surgery, identified himself as Surgeon to the Philadelphia Hospital, to the Institute for the Deaf and Dumb, Professor of the Institutes and Practice of Surgery, as well as Fellow of the College of Physicians of Philadelphia. He advocated bold surgery, saying that "the surgeon, when called upon to decide on the necessity of an operation, is not to give way to any mawkish sentimentality . . . having once decided in the affirmative, he soothes the patient's anxiety and cheers him up with brighter prospects in the future . . . he will so nerve his hand that he will proceed steadily, boldly, and unmoved amidst the effusion of blood, or the cries which indeed his abstractions from everything but the duties of his office will scarcely permit him to notice."

Joseph Pancoast was an old man when John Chalmers DaCosta first began to haunt the operating rooms, yet the younger man was able to see him do some urologic operations. He declared that Pancoast was the most marvelously rapid, the most certain, the most beautiful operator he ever saw, with a hand as light as floating perfume. Without anesthesia, Pancoast had to be fast and resourceful. His anatomic knowledge was remarkable, his steadiness of hand and keenness of eye were proverbial, and, though at his best as an ambidextrous operator, he was a popular teacher as well.

It was his plan first to teach anatomy, then link it with surgery and finally, surgery alone. He used models, casts and drawings to supplement dissection and to teach the relations of anatomic organs.

In his didactic lectures Pancoast systematically covered inflammations, abscess, ulcer, "watery gangrene" (cancrum oris or noma that plagued institutionalized children), typhoid gangrene (decubitus ulcer), glanders (so fatal to men who took care of horses), scalds and burns, frequent problems during the fireplace and candlelight era. He devoted many lectures to fractures and dislocations, subjects important to prospective nineteenth-century doctors, most of whom would

be confronted with such problems in general practice.

The *System of Anatomy for the Use of Students in Medicine* by Caspar Wistar, with notes and additions by William E. Horner, was entirely revised in the seventh edition of 1839 by Pancoast, who included numerous additions of his own. The book was updated in 1842 and for the third time in 1846, with beautifully colored plates, including some by Charles Bell.

Horner had inspired Pancoast with a love of anatomy and surgery. However, when Edward Robinson Squibb, a Jefferson graduate in 1845, attended his lectures Squibb wrote in his diary that he "attended Pancoast's lecture on dry bones and found it desultory and unsystematized with a good deal of valuable information dashed at the class in a bad, scattering manner, badly expressed, but with considerable attempt at style gesture and demonstration." And yet, at Pancoast's surgical clinic on another day, Squibb admired a beautiful operation on strabismus, noting that "he performed in a masterly manner and with excellent effect." Later, he watched Pancoast tie a urinary fistula in the perineum, a loathsome malady of multiparous women, done under ether anesthesia. It was Squibb who founded the pharmaceutical firm bearing his name, starting with the manufacture of ether on a large scale.

Pediatric Surgery

Soon after the Philadelphia Almshouse moved into Blockley Township, Pancoast was appointed to it as attending physician and, in 1835, to the Children's Asylum. Dr. Alfred Stillé, a friend of Pancoast's, reminiscing about his residency at the Children's Asylum in 1836, said that a hundred or more children were sheltered there, illegitimate and otherwise abandoned for the most part, on their way to early graves. Ophthalmia made them bleary eyed, puny and most miserable to see. Tuberculosis, syphilis and gonorrhea were common, the last of these frequently resulting in permanent blindness. Credé's method would not rescue childhood from this dread blight for nearly half a century. Bloodletting was still in vogue, by venesection, cupping and leeches. Stille reported that even cachectic children did not escape it. Pancoast firmly believed in the "immense" value of the practice, especially in local bleeding for the treatment of certain inflammations. One of his favorite expressions was "the antiphlogistic touch of the therapeutic knife." Such was the theoretical basis of pediatric surgery at the time.

The Philadelphia Hospital was 2 miles from its two affiliated medical schools, so the students had to be bused by horse-drawn omnibuses and ferried across the river. Each school provided its own bus to preserve order among the students of rival schools, for they were an unruly group of spirited youths. In 1845, following a dispute, all students were barred from the Philadelphia Hospital for nine years. In 1854 Pancoast transferred his clinics to the Pennsylvania Hospital, where he lectured for the next ten years.

Some of his cases make interesting reading more than a century later. From a student's notebook we learn that in 1863 he exhibited a man who incurred a contusion of the brain by a fall from a cart. The patient's pulse was slow and feeble, he was unable to swallow, he developed delirium together with continual movement of the right hand — a pretty clear clinical picture of subdural hemorrhage. Pancoast ordered an injection of turpentine and a mustard poultice to warm the patient. Three days later at the autopsy he demonstrated a fracture through the foramen magnum and a contused brain with two or three blood clots.

Two other patients were brought before the class with anal abscesses that resisted treatment. They were opened and seared with a red-hot iron.

At one of the student sessions in 1840 in the Jefferson Medical Dispensary Pancoast presented a child with a harelip and demonstrated the reparative operation for which he was noted. He used silver pins to fasten the parts. Langenbeck, of Berlin, was evidently the originator of this operation, which Pancoast performed frequently.

In Pancoast's day it was customary for Philadelphia's two rival medical schools to hold surgical demonstrations so that prospective students could choose between them, a sort of public relations exercise. Pancoast, for example, would have a case requiring removal of the upper jaw. With the patient almost erect and only partially anesthetized, with marvelous speed he would incise the face and rip out the bones with huge forceps. The scene was ferocious. The partially conscious patient spat out blood, bones and teeth, while unnerved students in the audience vomited and fainted. Thus did DaCosta describe the spectacle.

The British medical profession was angered by lurid accounts of the surgery of the day, the *Medical Press and Circular* insisting that this was outrageously false and a malicious libel against doctors.

Assistants had to immobilize a patient while the surgeon operated. Paul Guersant, in his book on *The Surgical Diseases of Infants and Children,* reported that in every case it was essential that the surgeon be surrounded by assistants capable of maintaining a firm hold on the patient and of exerting whatever force was necessary. Even after anesthesia had come into use, this was often true. Despite worldwide adoption of anesthesia as soon as it was introduced in 1846, American physicians did not use it consistently in surgery or obstetrics. Dr. Charles Meigs did not favor it, and I suspect that Pancoast was also skeptical, using it selectively and cautiously. The younger Gross once told DaCosta that in the first lateral lithotomy he performed at the Philadelphia Hospital he was so apprehensive that he assembled perhaps the most distinguished assistants on record; Dr. Agnew held the left leg; Dr. Pancoast, the right leg; and the elder Gross poured the ether.

Despite cries of horror from the public about surgery without anesthesia, the surgeons did not have to worry about charges of malpractice. Conscience and force guided them. In a book printed in London in 1819 the author stated that a medical apprentice must have a lion's heart, a lady's hand and a hawk's eye; a resolute mind so that he may not have a trembling hand when he goes to perform an operation; must be perfectly clean in his person and actions, but not so nice as to be afraid of dirtying his fingers when duty requires it; nor must he be of too delicate a nose, as he will have many bad smells to encounter, both with living patients and dead bodies.

Teaching

In 1844 Pancoast's *Treatise on Operative Surgery* appeared, containing 80 magnificent plates and 480 illustrations, together with explanatory notes testifying to the experience gained in nine years of service at the Philadelphia Hospital (1835 to 1844) that had enabled him to compare the value of different methods and to obtain a great number of accurate drawings of operations he had performed. The work, now a Garrison-Morton classic, was savagely attacked by English critics, but the 2,000 copies printed were soon sold and a second edition followed in 1846. All have handsome illustrations signed by various artists.

In his introductory lectures Pancoast called attention to the history of anatomy and to the medical heroes he admired. He advised his class

to study the history of medicine while personally regretting that time limitations required him to hold to more practical considerations. In a reminiscent mood, he compared medical education in his student days around 1826 with that of 1845 and mentioned the private subsidiary courses and the quiz classes of former days. In 1845, speculating on the ethereal essence of life, as mysterious as the essence of electricity or magnetism, he made this startlingly prophetic statement: "Magnetism we have converted into a guide to lead us over the trackless bosom of the ocean. Electricity, subservient to our wishes, is made to light up at command the lamp by our bedside."*

Pancoast felt paternalistic toward the youths half his age seated in his amphitheater. He spoke of their parents' pride and joy in their achievements; of the benefits of the medical profession to mankind; and of graduation as only the first stage in the long journey of existence ahead of them. He praised the nobility of a conscientious physician and the infamy of pecuniary considerations. He urged them to avoid the public press and to communicate only through authorized channels of medical communication, thus escaping the suspicion of ignoble motives.

His introduction in 1849 presented a hasty survey of the varying progress of anatomy through the ages. Use of the microscope was a great advance in his estimation, but he feared that doctors might be led by the instrument to become fragmented and abstruse in their deductions. Physicians of the time were not yet favored with the ophthalmoscope, endoscope, cystoscope or X ray. Ether and chloroform were novelties to be frequently distrusted; local anesthesia was not available, hypodermic medication not yet devised, the clinical thermometer was not in use, and bacteriology still awaited Pasteur. In 1849 Hancock in London proposed that iliac passion could arise from the appendix, but the idea of appendectomy had to wait for three or four more decades before Reginald Fitz showed the way (1886). There was no intravenous therapy; the catgut ligature was not yet in use. Listerism would not come until 1867, erysipelas was common, as were pyemia and sepsis of every description. Nurses of that period were menials, generally ignorant, dirty and sometimes drunk. Operative surgery consisted chiefly of removal of tumors, amputation of limbs, correction of deformities, treatment of wounds, cutting for stone, trephining the skull, and tracheotomy.

* Edison was not born until 1847. He invented the incandescent lamp in 1879. (Editor's note)

Travel

Pancoast went on extensive medical tours through Europe, bringing back and disseminating in this country the foreign advances in medical practice. His introductory remarks of 1856 gave glimpses of medicine abroad drawn from his trip that year. He had decided to abandon the operation on the fifth cranial nerve for tic douloureux, but having seen success with it in Vienna he said he was planning to try it again. Pancoast also favored an operation for goiter that he had seen in Italy, and he was enthusiastic about the ophthalmic work of von Graefe the Younger. It was a surprise to him that chloroform was preferred for anesthesia in England rather than ether, partly because the surgeon was less affected by the vapor when it was used by the open drop method.

A confirmed generalist, Pancoast was critical of the separation in Great Britain of surgery from medicine and thought that specialization in France was ridiculous. While abroad he worked with von Brücke and Rokitansky in Vienna, Gerlach in Hanover and Bowman in London, made ward rounds and witnessed operations by many notable continental surgeons.

The Pathological Society of Philadelphia had its *permanent* beginning on September 29, 1857, at the home of Jacob Mendez DaCosta, close by Jefferson Medical College. Pancoast was among the twenty-seven who met there that day to hear Silas Weir Mitchell make the first presentation.

In 1869 Pancoast again made the rounds of the European medical scene. In his introductory remarks that year, after welcoming the new students to "this medical emporium with its dread halls of medical science," he sketched what science had disclosed to him abroad. Fresh from an international convention in Paris and a meeting of ophthalmologists, he declared that there were only four great medical centers in the world: French, German, British and American. Spain and Italy he denigrated. His chief complaint about Austria was its extreme specialization. "There is in Vienna, as well as in other parts of the world, a vicious tendency to the narrowing down of the medical mind to the littleness of specialization," he complained.

Skoda he criticized for his therapeutic nihilism. He opined that too much time was being wasted with the microscope in pathologic examinations. In obstetrical departments he was favorably impressed by

the two-month courses afforded for the midwives in Vienna, but in Paris he was shocked by the shameless presence of a female medical student among the young men. That year (1869), there was a great uproar in Philadelphia about permitting women medical students to mingle with the men, and a fracas ensued at the Pennsylvania Hospital, where career-minded young ladies were backed by "the old Quaker blood." Pancoast added his name to an imposing array of outraged Philadelphia medical men who signed a protest that appeared in the public press.

In Edinburgh he visited Simpson and Syme. The latter he found using the antiseptic apparatus devised by Lister the year before to kill germs in the operating room, and he called attention to the first scientific approach to the germ theory in 1849 in John Kearsley Mitchell's book on the *Cryptogamous Origin of Malarious and Epidemic Fevers*. According to John Chalmers DaCosta, however, it was not Pancoast but J. Ewing Mears and W. W. Keen who were the first in Philadelphia to perform antiseptic surgery. This was at St. Mary's Hospital around 1887. Soon afterward Samuel W. Gross and Thomas G. Morton followed suit at the Jefferson and Pennsylvania Hospitals respectively.

In his valedictory charge of 1872, recalling that the graduates had seen more than 1,300 patients carefully treated before them, he exhorted the neophytes to plan at once for continued study. He spoke of the need to improve their minds and advised them to cultivate, at least at the onset, the various branches of medicine. Even though he has been variously regarded as an ophthalmologist, as a plastic surgeon and as a specialist in other surgical fields, he remained firm in his belief that the general practitioner was the most practical. As usual, he spoke of the proper decorum of the doctor, of medical ethics and outlined some of the duties of the physician. In the nineteenth century, a man could graduate from medical school after only two years of study and with hardly any preliminary education. Many of the doctor's skills were developed after graduation. Competition for students made it difficult to improve the standards of medical education.

When the first detached Jefferson Medical College Hospital on Sansom Street celebrated its opening in 1877, Dr. Pancoast spoke eloquently about the founder, Dr. George McClellan, and surveyed the advantages of clinical instruction that McClellan instituted at Jefferson. Pancoast was already retired by that time; Gross had been approached

to give the address, but he induced Pancoast to deliver it in his place. It was Pancoast's last official act in the school after a nearly forty-year affiliation.

Conclusion

Pancoast was a man of decided convictions — professional, moral and political, according to Samuel D. Gross; a kind husband and father; a warm friend; and an upright citizen. Long before he died, through hard work he accumulated a large fortune. He had a beautiful country home, Pleasant Dale Farm, at 8th & Berk Streets on the Cohocksink Creek, which he purchased in 1845, and which his wife, Rebecca, sold in 1872. A crack shot, he took delight in shooting duck and quail. He was interested in art and was especially fond of painting landscapes. In conversation he liked a good story.

He was a member of local and international organizations, including the American Philosophical Society, the Academy of Natural Sciences, and the College of Physicians of Philadelphia. He particularly enjoyed his membership in the elite Wistar Association, a group formed after the death of Caspar Wistar by members of the American Philosophical Society to continue Wistar's Sunday soirees that brought together

Figure 1. Medal struck in honor of Joseph Pancoast by the U.S. Mint in 1870. (Courtesy of Jefferson Medical College)

those who rarely met and to which every distinguished visitor to Philadelphia was sure to be taken as a guest.

In 1870 the United States mint struck a medal in his honor (*Fig. 1*), which is still listed and obtainable in the national historic series.

Pancoast earned well-deserved fame as an author, a practitioner, and a teacher. He was a brilliant star in the Jefferson galaxy that guided generations of professionals along the way of medical science.

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ACKNOWLEDGMENT

Warm thanks are expressed for the aid and encouragement of Frederick B. Wagner, Jr., M.D., Grace Revere Osler Emeritus Professor of Surgery and University Historian of Thomas Jefferson University, in the preparation of this report.

Professor DeVane, a silvered picture of academic sobriety, spoke of the fun it had been to be a Yale undergraduate in the class of 1920 with Henry Seidel Canby, Thornton Wilder, Stephen Vincent Benet, John Farrar, Philip Barry and Walter Millis. He declaimed:

> The old oaken Edna,
> The iron-bound Edna,
> The moss-covered Edna
> St. Vincent Millay.

To his gaping listeners, he explained, "We used to make up things like that. We had things then that most undergraduates miss today. We had privacy. We had leisure. We had that gaiety. . . .

"We had fun even in graduate school. We did a variorum edition of Humpty Dumpty in Old Norse and all sorts of languages. We preserved the amateur spirit. It's all much more professional now."

"Serious Students Worry Professor," *The New York Times,* March 21, 1965.

Thomas Hewson Bache: A Forgotten Fellow of the College of Physicians of Philadelphia

THOMAS A. HORROCKS

At the monthly meeting of the College of Physicians of Philadelphia on 2 October 1912, Secretary Thomas R. Neilson announced to the Fellows the recent death of one of their elder colleagues, Thomas Hewson Bache. Elected to Fellowship sixty years earlier, Bache had spent over thirty of those years serving the College in an extraordinary number of capacities, including Librarian and Curator of the Mütter Museum. Yet, despite his many years of faithful service, the College did not honor him with a biographical memoir as was customary, or any other kind of tribute. Except for a brief notice in George E. de Schweinitz's presidential address for 1912, Bache's name passed quietly from the roll of living Fellows.

A probable reason for the College's failure to acknowledge the passing of one of the most active Fellows in its history may be that Bache had the misfortune, if it can be called one, of outliving his contemporary Fellows, those who knew him best and who could have written an appropriate memorial. At the time of his death he had been inactive in College affairs for over twenty years and, as a result, many of the Fellows who were then active in the College knew little, if anything, of his long service to the institution. I hope that this brief offering will rescue Bache's name, if only temporarily, from obscurity by bringing to light his many contributions to the College.

The son of Franklin Bache, Professor of Chemistry at the Philadelphia College of Pharmacy and later at Jefferson Medical College, and the great-great-grandson of Benjamin Franklin, Thomas Hewson Bache was born in Philadelphia on 16 December 1826. Hewson, as he was called by family and friends, was named after his father's close friend and fellow physician, Thomas Tickell Hewson. After his graduation from the University of Pennsylvania in 1846, Hewson decided to study medicine, being graduated from Jefferson Medical College in 1850.

With his M.D. degree in hand, Bache entered private practice and soon immersed himself in the medical life of the city. Besides his association with the College of Physicians, he was a member of the Philadelphia County Medical Society, the Pathological Society of Phil-

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 247-253.
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adelphia and the American Philosophical Society. He was a resident physician at the Pennsylvania Hospital, a surgeon at the Howard Hospital and one of the first attending physicians at, and one of the founders of, the Children's Hospital of Philadelphia. He also served for a time as Director and Vice-President of the Pennsylvania Institute for the Deaf and Dumb.[1]

Bache's association with the College of Physicians of Philadelphia began with his election to Fellowship in 1852, just two years after his graduation from medical school. In November 1854 the College established the office of Librarian, and in the following January elected Bache to the post.* When Bache assumed his new duties, the College library was entering a period of transition from being a little-used collection of a few hundred books to one of the largest medical libraries in the United States. As we shall see, Bache played a key role in this transformation.

During his first month the new Librarian reviewed the holdings of the College library with the Library Committee and was mortified to find "hardly a complete set of any journal . . . not even a complete set of its own *Transactions*." He also reported that a number of multivolume works were missing one or more volumes. To remedy this distressing situation, Bache asked the officers to allow him and the Library Committee "to complete without loss of time such works as may in their opinion be worth completing," and he urged Fellows to return borrowed books and journal issues that they might possess.[2]

At the time when Bache informed the Fellows of the deplorable state of the library, the College was situated in its fourth home, the Picture House of the Pennsylvania Hospital.# Bache and the Library

* Bache was the first *official* Librarian of the College of Physicians. Before the office was created, there were three *unofficial* Librarians: Nicholas B. Waters, Michael Leib and Thomas Chalkley James. The first two were volunteers and James was "appointed." Library operations were in the hands of the Censors until 1834 when the Library Committee was created. From 1834 until Bache's election as Librarian the Chairman of the Library Committee carried out these duties. Ruschenberger, W. S. W. 1887 *An Account of the Institution and Progress of the College of Physicians of Philadelphia During a Hundred Years, from January* 1787. Philadelphia: Wm. J. Dornan, page 194.

The Picture House, located on Spruce Street between Eighth and Ninth Streets, was built in 1815–1816 for the accommodation and the exhibition of Benjamin West's *Christ Healing the Sick in the Temple.* The three previous homes of the College were the old Academy Building at Fourth and Arch Streets, Philosophical Hall on Fifth Street and the Mercantile Library at Fifth and Library Streets.

Committee wasted little time in putting the newly acquired space to use, soliciting donations and busily acquiring missing journal numbers. He later wrote that both he and the Committee "kept the library before the Fellows constantly" and that he "begged books everywhere."[3]

The efforts of Bache and the Library Committee produced substantial results, for the Committee reported in June 1855 that 352 volumes of books and journals had been added during the first six months of the year. In its report at the end of 1856 the Committee proudly stated that the library (now over 2,000 volumes) had greatly improved from the days when it occupied "a small and obscure corner of the stair landing at old Philosophical Hall."[4] In 1857 the library received the largest single donation up to that time when Thomas Forrest Betton, a Fellow, presented more than 900 volumes. By 1860 the library of the College had grown to more than 3,500 volumes.[5]

Four years later the library received the greatest gift in its history when Samuel Lewis, a Philadelphia physician and bibliophile, donated 2,500 volumes. Lewis's munificent offering inaugurated a period of phenomenal growth of the library, which lasted until the early decades of this century, most of its acquisitions coming from generous Fellows. Undoubtedly, the College's spacious new building at 13th and Locust Streets, which opened in 1863, together with Lewis's grand example, created an atmosphere that fostered an attitude of benevolence on the part of the Fellowship. Nevertheless, Bache should share the credit for creating this atmosphere, for he planted the seeds of liberality during the 1850s when he "kept the library before the Fellows constantly."

Bache was not in Philadelphia when Samuel Lewis made his generous donation but was serving in the United States Army in the Civil War. Because his war duties prevented him from carrying out his obligations as Librarian, he was replaced by Walter F. Atlee in 1863.

On the completion of his army duties Bache returned to active service at the College. In 1866 he was elected Curator of the Mütter Museum, where records reveal that he was an active Curator not only in the matter of acquisitions but in arousing interest in, and use of, the museum collections.

From the beginning of his tenure, Bache scoured American and European markets for specimens. At the end of his first year as Curator,

his efforts, as well as those of the Museum Committee, resulted in the addition of over 100 specimens and models, with more than half coming through donations. Notable acquisitions included the Politzer collection of tympanic membranes, plastic models by Auzoux, wax models of maladies of the eye from Tramond of Paris, the "Mütter American Giant," the livers of Siamese twins Chang and Eng, the "Soap Lady," and the Hyrtl collection.[6]

Probably the most important acquisition at that time was the collection of skulls and preparations of the Viennese anatomist Joseph Hyrtl, Professor of Anatomy at the University of Vienna. He contacted Bache in 1866, offering his entire collection of preparations relating to the development of the organs of hearing.[7] The College, however, was not then interested in purchasing the whole collection, but in 1873 Hyrtl offered not only his ear preparations but also his collection of skulls "of all the tribes of Eastern Europe," together with some others, including the "authentic skull of Mozart."[8] By this time the College was very much interested, and Bache visited Hyrtl in Vienna the next year to work out an agreement of sale. The Museum Committee enthusiastically declared Hyrtl's collection "the most valuable preparations in the Museum" and referred to them as "unrivaled."[9] The remarkable skull collection, however, did not include that of Mozart.

During his seventeen years as Curator Bache actively promoted interest in the Museum not only with the Fellowship but among medical students as well. In his first years of service the College gave Bache permission to open the Museum to students and visitors one afternoon a week. Although this move did not produce immediate results, years later the Museum Committee reported that the Museum was being "much more used for study and research, especially by those engaged as teachers and as authors."[10]

Evidence suggests, however, that despite the Museum's growing reputation a small but vocal group of Fellows did not share Bache's enthusiasm. Apparently, the competition between the Library and the Museum for the little space then available resulted in raising doubts in the minds of some Fellows of the Museum's worth. In an 1882 letter to William Hunt, Chairman of the Museum Committee, Bache combatively responded:

> The opinion of certain Fellows that the Museum is a white elephant should not influence the Museum Committee. . . . I well remember when some Fellows thought *it was absurd to try and form a library.* Probably some of them thought me a fool for working a number of years to form a library when no one used a book which we possessed. . . . [The Museum Committee] . . . is *responsible* for the proper spending of the income of the trust in *increasing* and preserving the collection. . . . We should continue to enlarge the collection by judicious purchases entirely irrespectively of the question of accommodation. . . . When the lower rooms are full, I would line the stairway if there is no other place.[11]

In 1883 Bache resigned as Curator of the Mütter Museum. The College acknowledged his years of service in its customary, understated way, thanking him for the "efficient and satisfactory manner in which he has administered the office."[12] Whether he resigned out of frustration or because he simply longed for retirement is a question that we cannot answer.

Bache served the College in a variety of other capacities. From 1859 to 1860 he was a member of a Committee for Soliciting Contributions to the Building Fund. In 1869 he was appointed to a committee to draft suitable resolutions on the death of Robley Dunglison. Later that same year Bache worked with a joint committee of the Philadephia County Medical Society and the Philadelphia College of Pharmacy in investigating the sale of adulterated drugs.

Bache worked for a time on behalf of the library as Secretary of the Journal Association. Organized in 1871 to furnish Foreign and American current periodical medical literature, the Journal Association was composed of Fellows who contributed an annual fee toward the subscription of various medical periodicals.

In February 1873 Bache was elected to the Hall Committee. Although he attended its regular meetings during the next ten years, he was unable to contribute much to its deliberations owing to his many Museum duties. After his resignation as Curator in 1883 he rarely attended meetings of the Hall Committee and resigned in 1887.

Although Bache lived for another twenty-five years, records indicate that he never attended another meeting of the College. He died at his home at 233 South 13th Street on 8 July 1912 of old age.

In 1987, when the College of Physicians celebrates the 200th anniversary of its founding, it will proudly recall celebrated names from its past. The name of Thomas Hewson Bache will probably not be among them. He was not of the same rank as Benjamin Rush, Samuel D. Gross, S. Weir Mitchell, or William Osler. He did not invent a

medical instrument, pioneer a surgical procedure, or advance a medical theory. He delivered few papers and published even less. But despite Bache's meager contributions to medical science, his professional life was not devoid of meaning or value. As Whitfield J. Bell tells us, men and women of the second rank play an indispensable, if not glamorous, role:

> It is they who keep alive ideas other men conceive and hold together institutions other men create. They serve laboriously on Committees, collect money for good causes, and preach and teach and write for the largest audience. They originate little: they transmit much.[13]

Thomas Hewson Bache was one of the most active Fellows in the history of the College. Although we know little of his personality and nothing of his family, records show him to have been a man who took his duties seriously, always putting the interests of the College before his own. Seeking neither reward nor fame, he served the College faithfully for over thirty years in a variety of tasks. While eminent Fellows, such as Rush, Osler and Mitchell, were making the College famous, forgotten Fellows, such as Thomas Hewson Bache, were holding it together.

Historical Collections of the Library
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Dr. Weissman commented that people do suffer increased feelings "of disappointment and unfulfilled wishes and needs during this time. There is also an increase in tension in the family. This happens for two reasons: Either the families are together, and they get on one another's nerves, or they aren't together. During the holiday season one's expectations are raised by the mass media, supermarkets, Santas on the street corners, advertisements, newspaper and magazine stories and television programs.

"There is a shared myth that families get together and share the experience in a happy and loving and joyous way. Of course, this is true for many people, but for many others it isn't, because the families are estranged, absent, unavailable or don't exist."

"Fending Off a Holiday Funk," Nan Robertson in *The New York Times,* November 23, 1977.

REVIEW

BRADFORD, H. F. *Chemical Neurobiology: An Introduction to Neurochemistry.* 507 pp., illus. New York: W. H. Freeman and Company, 1986. Price $36.95.

Reviewed by JOHN M. BERTONI

Because the field of neurochemistry is advancing with unprecedented rapidity, this latest introduction to the field will be welcomed, particularly by students and teachers of the subject. This book will have a much wider appeal for all neuroscientists interested in synaptic events, however. An introduction to such a rapidly changing field is an ambitious undertaking, especially when written by one author, as in this case. The chapter headings are Neurons: Organization for Interaction; Glial Cells: Mechanical and Functional Supporting Cells of the Nervous System; Brain Glucose and Energy Metabolism: The Linkage to Function; Neurotransmitters: Chemical Target Seekers; Neuropeptides: The Rising Generation of Neuroactive Substances; The Synaptosome: An In Vitro Model of the Synapse; Synapses: Their Development and Dynamics; Central Neurotransmitter Systems and Behavior; and The Failure of Neurotransmitter Systems in Disorders of the Brain and Nervous System. There is also an appendix of references to several recent textbooks and other learning materials concerned with neuroanatomy.

The introductory chapters on the neuron and the glial cell, beautifully illustrated with light and electron micrographs, incorporate data from physiologic and biochemical as well as neuroanatomic sources. The third chapter on brain glucose and energy metabolism includes succinct explanations of important metabolic pathways, 2-deoxyglucose tracer techniques, [31P] magnetic resonance data and metabolic compartmentation. However, this book is, in fact, about the synapse, as the remaining chapter headings attest. The clear exposition of neurotransmitters, neuromodulators and neurohormones is the forte of this book. Bradford skillfully marshals evidence from the literature that bears on our current understanding of the localization, synthesis, actions and inactivation of established and putative neurotransmitter systems. The discussions of the interactions among neurotransmitters, neuromodulators and neurohormones are lucid despite their requisite

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986): 255-257.
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tentative nature. Appropriate explanations of experimental methods help in the appreciation of the uncertainties and limitations of our knowledge. There is also a good amount of information presented concerning *in vitro* technologies. And the discussion of the effects of failure of neurotransmitter systems brings the importance of these systems to life. Despite the generally satisfying discussion of clinical correlations with neurotransmitter failure, there is no mention of the enormous and rapidly accumulating data derived from the human and animal studies with the toxin MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine) and its induction of a syndrome resembling Parkinson's disease.

What this book does, it does admirably well. However, a number of topics are omitted that many neuroscientists would expect to be included in a text subtitled *An Introduction to Neurochemistry.* The reader will not find satisfactory presentations of the biochemistry of gangliosides, mucopolysaccharides, prostaglandins and thromboxanes, cerebral edema, or vitamin requirements of the central or peripheral nervous system—all of which are scarcely mentioned. The omissions of the advances in the understanding of normal and pathological neurochemistry that have been made through the study of inborn errors of metabolism make this book much less than a general introductory text of neurochemistry. It leaves out the metabolic studies of muscle diseases, including glycogen storage diseases and carnitine deficiency states, as well as aminoacidurias. The expanding field of neuroimmunology is also greatly underrepresented.

Perhaps these shortcomings should come as no surprise in a one-author textbook of a rapidly changing discipline. Despite the misleading title, this is an excellent book and is heartily recommended for what it does well. It is a very well-organized introductory text concerned with the synapse that excels in clarity and readability. Bradford steers admirably between overemphasis on concepts and overemphasis on data. An enormous amount of basic research information is presented in an understandable framework, and the conclusions are often carefully stated to be "probably" or "very likely" true. The end result is a remarkable synthesis of theory and data, with appropriate discussion of the limits of some individual laboratory methods. The references are generally excellent, with between 5 and 22 general texts and review articles and 61 to 285 additional citations per chapter.

The references are as up-to-date as textbooks go, with some 1984 references and rare 1985 references cited. It is well-illustrated and reasonably priced. I can recommend it as an excellent introduction to the synapse and neurotransmitter systems.

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REVIEW

JEANNEROD, MARC. Translated by David Urion, M.D. *The Brain Machine.* 192 pp., illus. Cambridge: Harvard University Press, 1985. Price $16.95.

Reviewed by RICHARD M. RESTAK

Imagine a situation in which an experimental subject is asked to perform a quick flexion of the finger at any time he or she feels the desire to do so. As part of the experiment, measurements are taken of brain activity preceding this self-initiated movement. Such an experiment has actually been done by Dr. Benjamin Libet of the Department of Physiology of the University of California School of Medicine in San Francisco, and with some surprising and counter intuitive results.

Prior to the movement of the finger, at about 200 milliseconds (m.s.), the subject experiences the onset of the intention to move. This is documented by the subject's noting the "clock" position of a spot of light revolving in a circle on the surface of a cathode ray oscilloscope (the subject notes for later reporting the position of the spot of light at the moment he or she decides to move the finger). But 350 milliseconds *prior* to that event, a distinct "readiness potential" can be detected within the brain. In Libet's own words: "The brain 'decides' to initiate or at least to prepare to initiate the act before there is any reportable subjective awareness that such a decision has taken place."

Who or what "decides" to move in the absence of a conscious recollection of any mental event occurring in the 350 milliseconds prior to the subject's first intention to move the finger? In short, who or what is in charge here?

Libet's experiment, reported recently in the *Behavioral and Brain Sciences,* represents a technically sophisticated exploration of a question that has intrigued philosophers and neuroscientists for centuries. Where in the brain does the center or centers responsible for human consciousness and will reside?

In *The Brain Machine: The Development of Neurophysiological Thought* Marc Jeannerod, Professor of Physiology at Claude Bernard University in Lyon, France, presents a fascinating and detailed account of the different ways will, consciousness, action and self-organization

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 258-260.
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have been explained over the centuries.

Prior to the advent of preservative fluids, the brain defied anatomic description. At autopsy it collapsed or otherwise underwent deformation and deterioration. As a result, the ventricles rather than the brain substance itself struck early observers as the key component. Based on this reasoning, the notions of "receptacle," "reservoir" and "circulation" arose. This led to the concept of "animal spirits" as a description for the unit of nervous transmission. It was not until the experiments of Galvani in 1791 that the electrical nature of neural transmission was convincingly demonstrated.

Jeannerod skillfully details the dialectics that underlie many of the debates about the relation of the brain to will and consciousness. At one point the brain was recognized as the center from which all psychological activities take their origin (a clear victory for materialism). But then in 1751 it was noted that a decapitated frog continued to move when stimulated (taken as proof that, in Jeannerod's words, "The brain was therefore not necessary for the movement of the extremities which contradicted the notion of free will and volition localized in the head.").

Eventually, the participation of the brain in the genesis of intellectual or mental phenomena became indisputable. "The brain is the mysterious nuptial bed where the body and the soul celebrate their orgies," as one pundit put it. Divining the nature of these "orgies" has occupied neuroscientists and philosophers from Descartes to Libet. Their contrasting, often contradictory, pronouncements are discussed by Jeannerod in nine well-organized and intriguing chapters, which include "The Physiology of the Will"; "Representation, Plan, Programming"; "The Motor Idea?"; and, finally, "Action, the Force of Self Organization," wherein Jeannerod presents what he believes is the best explanation of how the human brain organizes itself.

"Constructivism is very different and assuredly less naive; according to this theory, the subject progressively constructs his representation of the real through his action on the environment." According to this explanation, voluntary movement becomes "the special if not unique means destined to feed information to a machine which never ceases needing it in order to construct itself then function." (p. 145)

The Brain Machine is highly recommended as a Grand Tour of the varied, sometimes irrational, often bizarre routes and byways taken over the ages by students of the brain in their quest to understand the

three-pound mass of protoplasm from which all insights must come. In the process of reading *The Brain Machine* the reader will find himself or herself engaged in a self-referential task: the brain seeking to understand itself. But this is as it should be, according to Jeannerod: "It is the subject and his brain which question the environment, inhabit it little by little and finally master it." (p. 146)

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REVIEW

WEISSMANN, GERALD. *The Woods Hole Cantata: Essays on Science and Society.* 230 pp. New York: Raven, 1985. Price $16.50.

Reviewed by ARTHUR J. BOUCOT

This volume consists of eighteen essays by a physician interested in biology and medicine. They appeared earlier in *Hospital Practice* and are eminently readable for both professionals and laymen. His essays might better be called tracts or pamphlets in the pre-twentieth century sense. At his best Dr. Weissmann writes very well; he is a man with an ax to grind, clearly appalled at the modern American contradiction between the technical heights to which medicine has climbed and the sociological mess to which our fellow citizens are condemned. The majority of his reports forcefully illustrate his outrage at this American contradiction, a contradiction accepted with such apparent equanimity by so many contemporary citizens of our republic. He skillfully inserts enough comments about Nazi horrors to draw a parallel with similar moral insensitivity that we all decry. He makes the parable of the mote in our brother's eye very timely.

For this reviewer Weissmann is at his best in *Cholera at the Harvey,* an essay not written by a woolly-headed liberal but clearly thought through by a pragmatic, public-spirited citizen who happens to be a rheumatologist currently practicing medicine at Bellevue Hospital in New York. He is the type of physician who gives cynical laymen hope that the medical profession, American style, still has a heart, can be saved—that it is well worth saving—and that it thinks of things other than its balance at the bank.

Weissmann's writing style is variable. Sometimes he practices a spare use of words that is compelling and effective. At other times he bogs down in showing the reader how well read he is, inserting too many *bon mots,* too many quotations from the classics. He is, certainly, a cultured humanist in the best sense, but he has no need to spend so many lines demonstrating this to the reader. He makes effective use of biting sarcasm while hammering away at the contradictions he must face daily in his practice, at times in the style of Jeremiah.

Dr. Weissmann uses data from the history of medicine with great skill while making his points. He is that refreshing rarity, a literate,

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truly educated physician, not a technician. He devotes some time to true science, as it is directed toward solving some of the clinical riddles he faces.

His final essay—an attack on Sir William Osler—came as a surprise. He views Sir William, a venerated figure in the English-speaking medical world, as a snob, as a sexist, and he has no time for Osler's insistence that the physician remain imperturbable in the face of "the most serious circumstances." This, in fact, may be the result of a conflict between the generations, if indeed a conflict exists. Sir William's contributions to twentieth-century medicine have been capably summarized by Harvey Cushing, his biographer. Maude Abbott's reminiscences of Osler certainly refute any charge of sexism, and the charge of snobbery seems to represent a contrast between middle-class Victorian behavior and that of today. Weissmann's repugnance for "imperturbability" holds up to the light two different, personal attitudes that a practicing physician can present to patients. Imperturbability has always been an effective way to lead and to command respect from others, whether in the sickroom or on the battlefield. One would suspect that few physicians today or in the past have been clinically effective while permitting their own emotions to become visible to their patients.

All in all, I heartily recommend this book to physicians and laymen. To laymen it will be comforting to recognize that there are still physicians who truly care for *all* mankind, both the lovely and the unlovely. To physicians I suspect that these pages, many of them vibrating with righteous indignation at the current social paradox pointed out so tellingly here, will help them renew their Hippocratic commitment to heal the sick.

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REVIEW

CHASE, DEBORAH. *Dying at Home with Hospice.* St. Louis: C. V. Mosby Company, 1986. 204 pp. Price $15.95.

Reviewed by PATRICIA INCH and PATRICIA WELLS

Designed as a guide for families considering hospice care, this timely book covers all aspects of the hospice movement. It includes practical information on selecting a hospice and on daily care of hospice patients. Although its title implies that the book is concerned only with at-home care, it covers inpatient service as well. The author points out that hospice care is not appropriate for every terminally ill patient and that hospices vary in the services they provide. A list of 200 recommended hospices in the United States, mostly Medicare certified, is included.

The material on the history and philosophy of the hospice movement accurately depicts the current status of hospice in the United States and the differences between hospice and hospital care. A chapter on the "Dynamics of Dying" helps the family understand what a dying person is experiencing, both psychologically (i.e., the Kübler-Ross stages) and physically. This is followed by chapters on "Hospice and Families" and "Hospice and Children," written with sensitivity and understanding of the feelings and needs of families faced with the terminal illness of a loved one.

Chapter 8, "Dying at Home with Hospice Care," offers realistic practical information on how to help make a patient as comfortable as possible. It covers topics such as choosing a room and a bed, bathing and feeding and care of the mouth and hair. Problems of pain, elimination, insomnia and dehydration are discussed with candor. Chapters on "The Final Hours" and "Grieving with Hospice" complete this comprehensive book.

The tone of *Dying at Home with Hospice* is serious and compassionate. One senses the benevolent intentions of the author and recognizes the painstaking research that went into the book. Unfortunately, it is not well written; almost every paragraph would have benefited from judicious editing. A bibliography is included, but no citations are

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986): 263-264.
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given for quotations and references in the body of the text. Nevertheless, this is an honest book that should prove very useful to an individual or a family seeking information about the philosophical and practical aspects of hospice care.

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Helen Brooke Taussig
1898–1986

HERBERT J. DIETRICH, JR.

A great and gracious lady, who became one of the world's most famous and honored physicians, was suddenly taken from our midst by an all-too-literal "deus ex machina" on May 20, 1986. Dr. Taussig apparently did not see an approaching car as she turned from a parking area into a main road; and she died in Pennsylvania's Chester County Hospital about an hour later. She will be remembered by her many friends and associates not only for her profound contributions to the art and science of twentieth-century medicine but also for her exceptional qualities of heart and mind.

Helen Brooke Taussig was born on May 24, 1898, in Cambridge, Massachusetts, where her father, Frank Taussig, was a Harvard economist. She attended Radcliffe College for two years, then the University of California, from which she was graduated in 1921 with Phi Beta Kappa rank. She wanted to attend Harvard Medical School and did so for a time as a special student, but its monastic doors of that day were closed to her as a degree candidate. (Many years later she was especially pleased when Harvard awarded her a Doctor of Science degree, honoris causa.) Instead, she began the study of medicine at Boston University School of Medicine, where she first developed an interest in the anatomy of the heart. She continued her studies at Johns Hopkins Medical School, from which she was graduated in 1927 and where her entire professional career was to be centered for the next thirty-six years until her academic retirement in 1963.

On the year following Dr. Taussig's internship in Pediatrics, there was a vacancy in the directorship of the newly established Cardiac Clinic at Harriet Lane Home (the pediatrics section of Johns Hopkins), and "because of her knowledge of the heart — far in advance of her associates," wrote Dr. Edwards A. Park, then Chief of Pediatrics, "it became clear that Dr. Taussig was just the young physician to take it over." It was also at Dr. Park's suggestion that she diverted her principal interest from acquired heart disease to the study of congenital origin, which she then called her "crossword puzzles."

Earlier, some outstanding work on congenital heart diseases had

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 265-271.
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been done by Dr. Maude Abbott and others, but their work was primarily the correlation of clinical with postmortem findings. Prior to about 1945, the subject of congenital heart diseases was restricted to, perhaps, half a lecture to medical students in pediatrics or cardiology and half a dozen pages of textbooks — usually with final comments that there was no definitive treatment for any of its victims and that life was destined to be quite short for all but a few.

All of this changed with Helen Taussig. She rescued congenital heart diseases from the "wastebasket" of medical subjects and, ultimately, many sufferers from their grim prognoses. This she did by learning to differentiate one *functional* category and type from another. Fluoroscopy and electrocardiography were the only technological aids to her earlier work, and some of the students used to say, only half in jest, that she couldn't read an EKG! Analyses of blood gases, cardiac catheterization and angiography were not in general use prior to the 1947 publication of Dr. Taussig's monumental textbook, of over 600 pages and ten years in the writing, *Congenital Malformations of the Heart.* In this book, radiographs, detailed anatomic drawings and especially the schematic diagrams, shaded from red to blue to show degrees of oxygenation in the cardiopulmonary vessels, made crystal clear for the first time the hemodynamics of septal defects, patent ductus arteriosus, pulmonary arterial atresia, tetralogy of Fallot (her "favorite" subject) and so forth.

If there was anything that nearly toppled Helen Taussig's usual Oslerian equanimity, it was the book: its aspect of permanence, the inertia of the publishers and their frequent demands for revision. She revised it once, in two volumes, in 1960. She much preferred the shorter monograph as a medium of medical communication, and to the medical literature she contributed about 130 publications on a variety of subjects, but mostly on the aspects of congenital heart disease.

Acquiring the detailed knowledge necessary for accurate diagnoses was to Dr. Taussig only the means to the goal she kept constantly before her: improving the quality of life for patients. She began to dream of helping certain cases of cyanotic heart disease by surgery. But she had to wait for Dr. Alfred Blalock, who had been working on the surgical correction of aortic coarctation, to become Chief of Surgery. Their collaborative studies of patients in whom cyanosis was caused by pulmonary stenosis or atresia culminated in the Blalock-

Taussig operation, one of the outstanding medical departures of our time.

A third, very important member of the Blalock-Taussig team was Vivian Thomas (later, Dr. Thomas), the technician in charge of animal surgery, who, with Dr. Blalock, had performed the operation on about 200 dogs before the first human Blalock-Taussig operation. He was a towering black man, of little formal education but with supreme intelligence and dextrous hands. An associate who was present at one of the early blue baby operations, in which there occurred some anatomic variant that had not been anticipated by the surgical plan, recalled that Drs. Taussig and Blalock turned to him and asked, "What do we do *now,* Vivian?" They never spoke of their work without acknowledging his part in its success.

In May 1945, in the *Journal of the American Medical Association,* Drs. Taussig and Blalock published jointly "The Surgical Treatment of Malformations of the Heart." It describes in detail the cases of the first three patients to undergo the Blalock-Taussig operation. The first, a severe tetralogy, had a stormy postoperative course. Characteristically, this paper mentions by name the six house officers but for whose excellent care "in all probability the child's life would not have been saved." The second case, which had a very smooth postoperative course, is of additional interest in that the anesthetist was our late Fellow, Dr. Austin Lamont.

As with other pioneer efforts of this kind, and with patients whose conditions had often seriously deteriorated prior to surgery, there were some disappointments. Personal regret over the "failures" quickly gave way to Dr. Taussig's relentless pursuit of the causes, much as a champion tennis player (which she was in her college days) might analyze her game.

As word spread of new hope through surgery for blue babies, patients began to deluge Dr. Taussig's cardiac clinic, arriving from all parts of this country and from abroad. She devised methods of handling the increased work load. In her crowded basement quarters she worked for most of her academic career amid the chaos of a busy medical marketplace.

Helen Taussig knew how to *win* victories; unlike ancient Hannibal, she also knew how to *use* them. She worked out the division of responsibilities within the "marriage" of pediatric cardiology and its developing partner, cardiovascular surgery. This was to promote the

efforts of both disciplines and become the model for their cooperation today. She initiated long-term follow-up care, subsequently one of the most successful rehabilitation programs ever devised for heart patients. In 1952 she reported on the long-term follow-up results of the first 1,000 Blalock-Taussig operations. Following her retirement, she analyzed these same cases, becoming a pioneer, too, in this use of the computer. In 1950 Dr. Taussig established biennial "reunions" to which "veteran" fellows were encouraged to submit reports of interesting cases from their practices to present to the "newcomers," who, in turn, gave long-term follow-up reports, very often with the patients present, on patients who had been cared for by the "veterans" as fellows or house officers. On these occasions Dr. Taussig would host lawn parties and picnics at her home in suburban Baltimore for fellows, their spouses and children, thereby fostering the friendship and freemasonry that today exist to an uncommon degree among physicians engaged in this work.

Helen Taussig's principal contribution to medicine was the physicians she taught. In 1944 there were only seven pediatric cardiologists in the United States. By 1963 Dr. Taussig had personally trained more than sixty physicians practicing this specialty in the United States and quite a number from foreign countries. Many have become professors of pediatric cardiology, with their own training programs, at such institutions as Yale, Cornell, Baylor, the University of Rochester, New York, and the University of Virginia. She gave generously of her time to national societies of organized medicine. Through service on various committees of the American Academy of Pediatrics and the American Heart Association (of which she became the first woman president in 1965) she helped to establish standards of training for pediatric cardiologists and standards of care for patients. She became a member of the first sub-board of Pediatric Cardiology on its establishment by the American Board of Pediatrics in 1961. Her desire to learn how to help patients with congenital heart disease hastened the advent of open heart surgery in 1954 and has made possible many of its present-day achievements. She once wrote, "The never ending challenge of medicine is that there is always more to learn."

Honors and awards came to Dr. Taussig in a list too long for recital here. They include twenty honorary degrees from colleges and universities here and abroad. She was awarded an honorary D.Sc. at the German University of Göttingen (1960), where four years later, "The

Helen B. Taussig Children's Pediatric Cardiac Center" was dedicated to her. Recognizing this modern incarnation of Athena, the University of Athens in 1956 awarded her simultaneously D.Sc., Professor Emeritus and Doctor of Medicine. At ceremonies commemorating the 600th Anniversary of the University of Vienna in 1965, Dr. Taussig received an honorary M.D. In addition, she was the recipient of over forty major awards, prizes and lectureships given by societies of pediatrics, cardiology and general medicine, by foreign governments and by our own, including the Presidential Medal of Freedom. A few weeks before her death, she received word that she had been voted the recipient of the Kober Medal of the Association of American Physicians. She was a member of the American Philosophical Society and of the American Academy of Arts and Sciences.

Academic advancement in her own institution came much more slowly than one would have thought. She remained an Instructor for the first sixteen years, an Associate Professor for the next thirteen years; and she was promoted to full Professor only four years prior to her retirement. (Her annual salary for much of that time was said to be in the range of eight to ten thousand dollars.) This situation improved later. She was made Emeritus Professor of Pediatrics on her retirement, and for the next five years held the Thomas M. Rivers Research Fellowship.

Habits of thrift carried over from her personal life to her service on national committees. She was interested in the economics of health care delivery. Little wonder that when she went to Paris in 1947 to be made a Chevalier of the Legion d'Honneur, she was "scandalized" when the U.S. Embassy placed a car and driver at her disposal for several days.

Dr. Taussig's humanitarian interests extended quite beyond the boundaries of her own specialty. For example, in the early 1960s when birth defects began to appear in the offspring of European mothers who had taken the drug Thalidomide, she went to Germany to study the problem at firsthand, then promptly published warnings in time to help prevent a similar epidemic here. She served as honorary chairman of the Physicians' Committee for Social Responsibility in 1967, which was then concerned with the plight of Vietnam children who had been burned and otherwise injured in the war. She was a member of the United States delegation to the World Health Assembly Conference in Geneva in 1967. Her liberal stance on the issue of abortion

law reform reflected her concern not only for babies but also for parents.

On first meeting this remarkable woman, one might have been aware of slight diffidence or shyness, which disappeared as she continued in animated conversation. Her blue eyes were optimistic, unworried; and they beamed when she was amused. She spoke with a very soft, yet distinct, voice, as she had a conductive hearing impairment for which she underwent a successful stapes fenestration operation in the early 1960s. One might wonder how she could hear soft murmurs; but she regularly used an amplifying stethoscope. She was tall, trim and robust in appearance and gently cordial in manner. Visitors to her house were always invited to share some of the very fine sherry she kept on hand for them. In cold weather, there was a fire in the fireplace, and her dog usually lay in front of it. Seasonally, flowers from her garden, which she liked to tend herself, were brought indoors. Dr. Taussig, when she was not traveling, liked to vacation at her family cottage on Cape Cod, where fellows and students were often guests. Between work on their manuscripts and the lessons she gave them on how to address large audiences, she taught them how to boil lobsters and make blueberry muffins and beach plum jelly. Thus, she partly dispelled the awe and wonder — even of those who had known her for a very long time — that her presence inspired. But the hardest lesson for most of them to learn was when she gently reminded them, "You must learn to call me Helen."

Although she never married, she encouraged her women students to do so, have their families, then return to medicine. Births of children to her "families" would bring suitable gifts, perhaps a sterling porringer engraved with the child's name and "from Helen Taussig." As she grew older, she mourned what seemed to her an inordinate number of fellows she had trained who had died of various causes, while she herself remained quite healthy. When they were seriously ill in hospital it was her habit, in consultation with their physician, to choose a suitable day for a visit, then fly — sometimes great distances — to give them support and encouragement.

Helen Taussig's later years were active, first in Baltimore, then, for the last six or seven, at Crosslands, Kennett Square, Pa. Earlier, she was invited to visit many parts of the world where she had former students and friends. In 1976, on her seventy-eighth birthday, fellows and friends came to Baltimore from all parts of the world for an

international symposium on pediatric cardiology they had arranged in her honor. At the time of her death she was investigating malformations of birds' hearts at the University of Delaware. Until the end of her life, she remained youthful in outlook, confident of the future, and showed but few signs of aging.

Dr. Taussig prized her association with the College of Physicians. Ease of access to the College and its library was one of the main reasons she elected to live in suburban Philadelphia after she left Baltimore. Many of our Fellows had been students at Johns Hopkins; others had served with her on various national committees and in societies of organized medicine. In 1978, she was elected an Honorary Fellow of the College at appropriate ceremonies.

A Memorial Service for Dr. Taussig was held on June 26 at Johns Hopkins University, conducted in part by some of her former fellows. To the institution she loved heart and soul she willed her body as well. The surviving members of Dr. Taussig's family — her three nieces and two nephews — have our deepest sympathy in their great loss, and also her "family of fellows" whose lives and hers were so reciprocally meaningful in terms of both scientific and humane considerations.

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ACKNOWLEDGMENT

The author is deeply grateful to Dr. Mary Allen Engle, a fellow in cardiology at the time of the first blue baby operations, for permission to draw freely from several of her publications about Dr. Taussig and her work. Dr. Engle is currently Professor of Pediatrics and Pediatric Cardiology at New York Hospital–Cornell Medical Center.

JOSEPH M. F. HUGHES
1905–1986

J. MARTIN MYERS, JR.

Joseph Hughes died on June 23, 1986, at Twining Village, a retirement community in Bucks County, Pennsylvania, where he had lived as a resident following the death of his loving and caring wife, Anne, in November 1985.

Born on April 17, 1905, in Carbondale, Pennsylvania, he was the second child of the local school superintendent and his school teacher wife. After the father's early death, while Joe was still a young lad, his mother supported her five children by teaching public school. In addition, she tutored her own children. This and her intense encouragement to get as much education as possible "to get out of Carbondale" imbued them with high regard for the importance of education. All were academic achievers; of the four boys three became physicians and one a lawyer.

Joe followed his older brother, Boland, to the University of Pennsylvania at age 16. Before graduation in 1925 he was manager of the boxing team and on the editorial board of the *Daily Pennsylvanian.* He was elected to Sigma Xi. After receiving his degree from the School of Medicine (1929) he took a two-year internship at the Pennsylvania Hospital. In 1931 he served as Research Associate at the Henry Phipps Institute, where his future father-in-law, pathologist Eugene L. Opie, was Director. The following year he was awarded a National Research Council Fellowship in Neurophysiology at Cornell; there he worked with Herbert Gasser for two years. Dr. Earl Bond, Physician-in-Chief of the West Philadelphia Department of the Pennsylvania Hospital, persuaded him to return to Philadelphia in 1934 to accept one of his newly awarded Rockefeller Fellowships. There he continued his research interests as Chief and subsequently as Director of Laboratories.

Dr. Hughes's early primary interest was in neurophysiology. His first publication, coauthored with Louis LaPlace, appeared in 1930 in the *Journal of Pharmacology and Experimental Therapeutics:* "The Effect of Hypertonic Solutions of Sodium Arabinate on Cerebrospinal Fluid." With Gasser he worked and published on the electrophysiology of nerve transmission in the spinal cord. He was a pioneer clinical

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encephalographer. In May 1935, at an annual meeting of the American College of Physicians in Convention Hall, he gave the first public demonstration in Philadelphia of "brain waves which tell instantly when you're really thinking and when you're resting." He was instrumental in establishing the EEG labs not only at the Institute for Mental Hygiene of the Pennsylvania Hospital but also at the Hospital of the University of Pennsylvania, Jefferson Medical College, Hahnemann Medical College, The Philadelphia State Hospital and the U.S. Naval Hospital.

The first favorable reports of electroconvulsive therapy in Italy by Cerletti and Bini reached this country largely through the British literature in 1939. After being encouraged by his own experiments with cats and finding no deleterious effects on memory, learning or cellular pathology, Dr. Hughes built an electroshock machine for humans with the help of Fritz Schindler, R.N. On May 1, 1940, a severely and chronically depressed woman was treated successfully. This was one of at least three independent trials of this new treatment in America in early 1940; it was most probably the first with an American made machine.

During World War II Dr. Hughes entered the Navy as a Lieutenant Commander, serving first as Director of the Neuropsychiatric School of the Philadelphia Naval Hospital Corpsmen, opened at the School of Nursing for Men at the Pennsylvania Hospital. He was later Chief of Psychiatry and then Consultant at the Naval Hospital and retired with the rank of Captain (MC) USNR in May 1965.

Following World War II, Dr. Hughes developed an active psychiatric practice at the Institute of the Pennsylvania Hospital, though he continued on the staff of the Department for Sick and Injured at Eighth Street and the Benjamin Franklin Clinic organized there in 1948. He emphasized the linkage between neurobiology and psychiatry, utilizing medications and somatic treatments with directive and supportive psychotherapy for the patient and family — an approach less popular in the 50s and 60s than at present. His caring for patients was more congruent with the style of the old-time practitioner who was willing to go to the patient's home to deal with a crisis as he did in many instances, rather than that of an office specialist who expects the sick patient to be brought to him. His caring also led him to solicit funds from his wealthier patients to support hospital treatment of the less affluent. Seed money for the development of Pennsylvania Hospital's

Community Mental Health Center was obtained with his help.

His early faculty appointments were at the School of Medicine and the Graduate School of Medicine of the University of Pennsylvania. He became a Fellow of the College of Physicians of Philadelphia in 1937. The American Board of Psychiatry and Neurology certified him in both specialties in 1939. From 1946 to 1964 he was Professor of Psychiatry at Women's Medical College and their Visiting Chief at Philadelphia General Hospital.

His marriage in 1932 to a contemporary Pennsylvania Hospital nurse and "the boss's daughter" (his phrase to his children) was a warm and complementary one lasting more than half a century. There are eight children, of whom four sons followed him into medicine: James, a neurosurgeon in New York City; William, a gastroenterologist in Washington, D.C.; John, an internist in New York City; and David, an orthopedic surgeon in Lancaster.

This memoir would be incomplete without the story he often told on himself to family, friends and psychiatric residents at the Institute. A very sick patient pulled a gun on him in his office and stated that he was going to kill him because "Heaven needs good doctors like you." Dr. Hughes reacted by vomiting over the top of the desk; whereupon the patient put down the gun and consoled him. His faithful secretary promptly came in and removed the weapon. It is hard to imagine a more incongruous situation for this psychiatrist, who was always impeccably groomed, always carried himself with well-mannered, proper decorum and maintained an air of competent control.

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George Allen Hahn
1911–1986

J. EDWARD LYNCH

On Friday, May 2, 1986, Dr. George Allen Hahn died in his sleep at his retirement home, "Coveside," in St. Michaels, Maryland, on the Eastern Shore of Chesapeake Bay. He died as he lived — peacefully and quietly.

Dr. Hahn's chief interest in medicine was the field of pelvic oncology in women, although his training was much broader. He shared his expertise and knowledge with patients in the general Philadelphia area and also, worldwide, in Sri Lanka, Brazil, Costa Rica, and North Africa as a member of the staff of the ship *Hope* and its international programs. He was a former professor of Gynecology and Obstetrics at the Jefferson Medical College of the Thomas Jefferson University, where he was responsible for the teaching and treatment of pelvic oncology patients for many years after the death of his mentor, the late Dr. Lewis C. Scheffey. His relationship to patients, whether private or on the teaching service, was close, caring, tender and understanding.

He was born in Brooklyn, New York, where he received his early education at the Brooklyn Poly Prep Country Day School. He then attended Dartmouth College and the School of Medicine of Yale University.

Dr. Hahn first married Cynthia Hawkins, who preceded him in death. From their marriage were born five children: one son, G. Allen Hahn, Jr., M.D., and four daughters, including one set of twins. He later married the former Anna Pierno, who survives him, as do his children.

Included among the many medical organizations to which he belonged were the American Medical Association, the Pennsylvania State Medical Society; the Philadelphia County Medical Society (President); the Obstetrical Society of Philadelphia (President); the College of Physicians of Philadelphia (Secretary); the American Cancer Society, Philadelphia Branch (President); the American Gynecology and Obstetrics Association; and the J. Aitken Meigs Association.

An active doer in medicine, he accepted many appointments for special services and programs to benefit the less fortunate.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 275-276.
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It was my greatest privilege to have known him for over forty-five years. He will be sorely missed by his devoted family, his friends and patients.

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DEPARTMENT OF RETROSPECTION
The Jefferson Medical College Connection: A Letter From Sir William Osler

FREDERICK B. WAGNER, JR.

On September 24, 1914, Sir William Osler was scheduled to deliver the introductory address to the ninetieth annual session of the Jefferson Medical College of Philadelphia. War conditions in England compelled him to cancel the engagement, but he sent a letter intended to be read to the students on that occasion. Unfortunately, it was delayed in transit and arrived a day late. Doctor J. Parsons Schaeffer, Professor of Anatomy, gave an address with apologies to the students for their disappointment.

Osler's letter was subsequently published by the students in *The Jeffersonian* (Vol. 15, October 1914). The original, a typed manuscript with handwritten corrections, was signed by Osler. It reads as follows:

Presented at a meeting of the American Osler Society in San Francisco on April 12, 1986.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 277-282.
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Dear Students.

I am, of course, sadly disappointed not to be able to address the ~~class~~ students at Jefferson this year. I owe much to the men of this school - let me tell you in what way. The winter of 1869 -70 I had a bed-room above the office of my preceptor Dr. James Bovell, of whose library I had "the run." In the long winter evenings, instead of reading my text-books, 'Gray' and 'Fownes' and Kirkes, I spent hours browsing among folios and quartos, and ~~all sorts of~~ the promiscuous literature with which his library was stocked. I date my mental downfall from that winter, upon which, however, I look back with unmixed delight. I became acquainted then with three old 'Jeff' men - Eberle, Dunglison and Samuel D. Gross. The name of the first I had already heard in my physiology lectures in connection with the discovery of cyanide of potassium in the saliva; but in his Treatise of the Materia Medica, and in his Treatise on the Practice of Medicine, (in the yellow brown calf skin that characterized Philadelphia medical books of the period) ~~there was~~ I found all sorts of ~~just the~~ useless information in therapeutics so dear to the heart of a second year medical student. Eberle was soon forgotten as the years passed by, but it was far otherwise with Robley Dunglison, a warm friend ~~to three~~ generations of American medical students. Thomas Jefferson did a good work when he imported him from London, as Dunglison had all the wisdom of his day and generation ~~and~~ combined with a colossal industry. He brought

a great and well deserved reputation to Jefferson College. After all, there is no such literature as a Dictionary, and the twenty three ~~28~~ editions through which Dunglison passed is a splendid testimony to its usefulness. It was one of my stand-bys, and I still have an affection for the old editions of it, which did such good service. (And by the way, if any one of you among your grandfather's old books find the 1st edition published in 1833 send it to me, please) But the book of Dunglison full of real joy to the student was the Physiology, not ~~the~~ so much knowledge, ~~as~~ that was all concentrated in 'Kirkes', but there were so many nice trimmings in the shape of good stories. ~~One day~~ One day, we had returned from an interesting post mortem, and I asked my preceptor where ~~will I find~~ to look for a good account of softening of the stomach, and he took from the shelf S. D. Gross's Pathological Anatomy, 2nd edition. I suppose there is not a man in this room who has opened the book - even great text-books die like their authors - and yet if any one ~~of you~~ wishes to read a ~~good~~ text-book account of gastro-malacia, ~~I do not know where he will find~~ he cannot do better than look a ~~better than in~~ to the book ~~I have~~ just mentioned. And look, too, at the account of Typhoid Fever, written remember in 1845, five years before the differences between typhus and typhoid were recognized in England. Many and many a time I have had occasion to refer to this work, and always with advantage. Later I came to reverence the author as the Nestor of American surgeons. Not many years afterwards I got into mental touch with two more Jefferson men - Samuel Henry Dickson, one of the most brilliant teachers in medicine the school has ever had. His essays on "Life, sleep, pain etc." are full of good matter, and

especially let me commend to you his Study on Pneumonia. The other was John K. Mitchell, the great father of a still greater son, whom I learned to know in connection with his early studies on the germ theory of disease. I really came to Philadelphia through the good offices of Jefferson men. Early in the eighties I used to earn an honest penny by writing articles for the Medical News, of which ~~Moore~~ Hays was the editor ~~and~~ with Samuel W. Gross and Parvin ~~his~~ the active collaborators. In 1884 when Professor Stille resigned and Dr. William Pepper ~~(of blessed memory in Philadelphia)~~ took the Chair of Medicine, there was a strong local field in for the Chair of Clinical Medicine. One day Samuel Gross said to Pepper "There's a young chap in the north who seems to dot his i's and cross his t's." You had better look him up". Well, the upshot was that the plan of the Medical News editorial committee ~~suggested~~ succeeded - I got the Chair. No small measure of the happiness of the five happy years I spent in ~~this city~~ Philadelphia came from my association with Jefferson men. Among the surgeons, Keen and Samuel W. Gross became intimate friends. They, with Brinton, Mears and Hearn, maintained the splendid surgical traditions of the school. With the seniors in medicine, Bartholow and Da Costa, I never got on quite so intimate terms, but they were always encouraging and friendly. The younger Jefferson set became my fast friends, particularly Wilson and Hare.

With best wishes for the progressive growth of ~~the~~ school, with which are associated many of the foremost names in the history of American medicine.

Sincerely yours
W. Osler

This letter indicates that Osler had more than casual acquaintance with practically all of Jefferson's faculty of that era. This came about through his activities in the College of Physicians of Philadelphia, his consultations, and social life at the Rittenhouse Club and private homes. In his golden rule spirit he regarded Jefferson as a "sister institution" rather than a rival one.

Among the older set William W. Keen and Samuel W. Gross were his most intimate friends; among the younger were James Cornelius Wilson and Hobart A. Hare. Keen, Osler and S. Weir Mitchell cooperated in a driving force that obtained funds and books that greatly enlarged the library of the College of Physicians. Samuel W. Gross almost regularly invited Osler for Sunday dinners and tea at his home at 1112 Walnut Street, just two blocks from the Medical College. In the hospitality of the Gross household, Osler enjoyed the social graces of Mrs. Gross, who was destined later to become his wife.

Hobart A. Hare was initially a colleague of Osler at the University of Pennsylvania as Professor of Diseases of Children and succeeded Roberts Bartholow as Professor of Materia Medica and Therapeutics at Jefferson in 1891 for the next forty years. When Jacob Mendez DaCosta resigned as Chairman of Practice of Medicine in 1891, Osler was Jefferson's first choice for successor. On May 11 of that year Osler was propositioned by unanimous action of the Board of Trustees and of the Faculty with reference to the vacant Chair. A joint Committee consisting of Trustees, the Honorable Furman Sheppard and Ex-Mayor Fitler, with Dr. Hobart A. Hare requested the favor of a personal interview with Osler. The latter declined but strongly recommended his intimate friend J. C. Wilson for the post. Wilson carried the Chair with great distinction until 1911. He and Osler delighted in playing innocent jokes on each other. The most famous one on Osler's part is told by Harvey Cushing in his *Life of Sir William Osler.* Shortly before noon on May 7, 1892, Wilson stopped by Mrs. Gross's home, found her in the rear garden with Osler, and accepted a light luncheon. Mrs. Gross then excused herself with the statement that a hansom was waiting and she had to leave. Wilson promptly withdrew and a few hours later received a telegram from Osler: "It was awfully kind of you to come to the wedding breakfast."

Mr. William Potter Wear, a Trustee of Jefferson from 1941 to 1984, remembered as a little boy crossing the Atlantic with his grandfather, the Honorable William Potter, President of the Board. The latter was

engaged in conversation with Osler at an adjacent deckchair. He overheard Osler remark: "The man you should have at Jefferson is Thomas McCrae." This was in September 1910 when J. C. Wilson was about to resign the Chair of Medicine, effective for June 5, 1911. McCrae had married Osler's niece, Amy Gwyn, daughter of his sister Charlotte. He was a fellow Canadian who had been under Osler's instruction at Hopkins and was aiding in editing his former chief's *Principles and Practice of Medicine.* McCrae continued later editions after Osler's death, the ninth in 1922 to the twelfth in 1935. The McCraes were favorites of the Oslers and took occasional excursions together while visiting with them at Oxford. Through the revisions of his books, Osler for the rest of his life was in contact with McCrae, who kept him abreast of happenings at Jefferson. It was McCrae who had invited Osler to give the address in 1914, and Mrs. McCrae presented the manuscript to the Jefferson archives on May 21, 1936, the year after her husband's death.

Lady Osler never forgot her first love, Samuel W. Gross, and the first provision in her will of 1928 was a bequest of £5,000 to endow a lectureship in surgery at Jefferson in honor of her first husband's interest in tumors. This lectureship became a professorship in which the endowment increased more than tenfold. On September 25, 1984, at the Oslerfest in Oxford, a plaque was presented to Green College in honor of Lady Osler on behalf of Thomas Jefferson University and was hung in the main hall of the Osler mansion at 13 Norham Gardens, the so-called "Open Arms."

When the Philadelphia General Hospital was discontinued in 1977, the Osler-Jefferson connection was strong enough to secure Dean Cornwell's painting of "Osler at Old Blockley." This portrait is prominently displayed in the main lobby of the Medical College. In defiance of those who speak of Osler in terms of myths and legends, his true spirit is much alive at Jefferson, where pride is taken in his various connections with this institution.

Jefferson Medical College
of Thomas Jefferson University
Philadelphia, PA 19107

ACADEMIA

Items of Interest from Philadelphia Medical Centers

Hahnemann University. A Section of Geriatrics has been established under the direction of *Robert J. Nathan, M.D.*

Ralph J. DeHoratius, M.D., professor of medicine and director of the Division of Clinical Immunology and Rhematology, has been elected President of the Philadelphia Rheumatism Society.

The School of Allied Health Professions has named *Kathryn E. Fuscaldo, Ph.D.,* professor of hematology and oncology, as acting dean.

Evangelos T. Angelakos, M.D., Ph.D., has been appointed acting vice president for Academic Affairs and acting dean of the School of Medicine.

The Medical College of Pennsylvania. *Walla Lynn Dempsey, Ph.D.,* a research instructor in microbiology and immunology, has been awarded the Mary DeWitt Pettit Fellowship for 1986.

Anne A. Idiculla, M.D., Director of the Moss Amputee Program, has been named head of the Section of Rehabilitation Medicine in the Orthopedics Division.

Temple University's College of Arts and Sciences 1986 Certificate of Honor has been given to *Lila Stein Kroser, M.D.,* clinical instructor in community and preventive medicine.

A grant has been received from the National Institute of Mental Health to study persistent reactions of rape victims and their treatment. The project will be under the direction of *Edna B. Foa, Ph.D.,* professor in the department of psychiatry.

The chairman of the newly established department of emergency medicine is to be *David K. Wagner, M.D.,* professor of emergency medicine and surgery.

University of Pennsylvania Health Institutions. *John M. Daly, M.D.* Professor and Chief of the Division of Surgical Oncology, has been appointed to the Board of Directors of the American Cancer Society.

The Joseph B. Goldberger Award in Clinical Nutrition has been given to *Albert Z. Stunkard, M.D.,* Professor of Psychiatry.

Mayor Wilson Goode has appointed *Jonathan E. Rhoads, M.D.,* Professor of Surgery, Co-Chairman of the Mayor's Commission on Health Risk Assessment for a proposed trash-to-steam plant.

The 1986 Temple University School of Medicine Distinguished Alumni Award has been given to *Morton M. Kligerman, M.D.,* Professor of Radiation Therapy.

Peter Quinn, D.M.D., M.D., has been appointed Chief of Oral and Maxillofacial Surgery of the Department of Dental Medicine.

The Young Investigator's Award of the North American Society of Pacing and Electrophysiology has

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 283-285.
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been given to *Alan H. Kadish, M.D.,* a Fellow in the Department of Cardiology.

John M. Eisenberg, M.D., Chief of the General Medicine Section in the Department of Medicine, and *Sol Katz, M.D.,* Professor of General Medicine, have been appointed to the Physician Payment Review Commission by the Office of Technology Assessment of the U.S. Congress.

In recognition of his work in pulmonary immunology research, *Jack A. Elias, M.D.,* recently received an RJR Nabisco Scholar Award.

As subcontractors under a grant from the Pew Memorial Trust to the Philadelphia Health Management Corporation, *Sankey V. Williams, M.D.,* associate professor of medicine, and *David B. Nash, M.D., M.B.A.,* will conduct a study of high-cost patients in Philadelphia's major teaching hospitals.

Thomas Jefferson University. In July 1986 the Jefferson Surgical Center was opened to provide ambulatory patients with surgery of the ear, nose and throat, hand, hernia repair, breast biopsy and minor gynecologic procedures.

Deborah Lore Jones, M.Ed., has been appointed associate director of continuing medical education.

The American College of Radiology has awarded a Gold Medal to *Simon Kramer, M.D.,* Distinguished Professor of Radiation Therapy.

Willis C. Maddrey, M.D., Magee Professor of Medicine and Chairman of the department, has been elected a Regent of the American College of Physicians.

Burlington Achievement Awards have been given to *Marion J. Siegman, Ph.D.,* professor of physiology, and to *Laird G. Jackson, M.D.,* professor of medicine.

Christian R. and Mary F. Lindback Awards for distinguished teaching have been won by *George C. Brainard, Ph.D.,* assistant professor of neurology, and to *Willis C. Maddrey, M.D.*

A six-part Cocaine Awareness Program is being offered to individuals troubled by their use of cocaine.

Under the direction of *Philip Katz, Ph.D.,* associate vice president, technology and information management, an advanced telecommunications project is under development that will integrate voice, data and video communications throughout the hospital, store it and make it quickly accessible to users. It will permit teleconferencing, message forwarding and other conveniences aimed at making the center more efficient and competitive.

A grant from a private Philadelphia family foundation will fund a Recombinant DNA Laboratory. *Robert H. Grafstrom, Ph.D.,* will be in charge.

Keith L. Wapner, M.D., has been appointed assistant professor of orthopedic surgery and director of the Foot and Ankle Service.

A satellite family medicine unit has been opened at 2305 Fairmount

Avenue under the direction of *John W. Stringfield, M.D.,* and *Judith Shimer Stringfield, M.D.*

Paul Maurer, Ph.D., has been appointed chairman of the Transplantation Biology and Immunology Committee of the National Institute of Allergy and Infectious Disease. Dr. Maurer is the former chairman of the department of biochemistry.

The 1986 Medal of Achievement, sponsored by the Lederle Laboratories, and the Sir Stewart Duke Elder Glaucoma Award were recently given to *George L. Spaeth, M.D.,* professor of ophthalmology.

Man's inventions, directed always onward and upward, have an odd way of leading back to man himself, as a rabbit track in snow leads eventually to the rabbit. It is one of his most endearing qualities that man should think his tracks lead outward, toward something else, instead of back around the hill to where he has already been; and it is one of his persistent ambitions to leave earth entirely and travel by rocket into space, beyond the pull of gravity, and perhaps try another planet, as a pleasant change. He knows that the atomic age is capable of delivering a new package of energy; what he doesn't know is whether it will prove to be a blessing. This week many will be reminded that no explosion of atoms generates so hopeful a light as the reflection of a star, seen appreciatively in a pasture pond. It is there we perceive Christmas—and the sheep quiet, and the world waiting.

E. B. WHITE, "The Distant Music of the Hounds." *New York Times,* December 24, 1982.

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 286.
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Index

Series V, Volume VIII

Academia, VIII, no. 1: 73; no. 2, 135; no. 3, 210; no. 4, 281
APPEL, MARIAN K., review of Oliver Sacks, *The Man Who Mistook His Wife for a Hat and Other Clinical Tales,* VIII, no. 3 (1986): 203
"Architectural Concepts in 1909 and Their Influence on the College Building Design," see Kling, VIII, no. 2 (1986): 75
BARNSHAW, HAROLD D., "George E. de Schweinitz, M.D., and the de Schweinitz Lecture in Ophthalmology," VIII, no. 1 (1986): 37
BERTONI, JOHN M., review of Harry F. Bradford, *Chemical Neurobiology: An Introduction to Neurochemistry,* VIII, no. 4 (1986): 253
Blady, John Valentine (1905 – 1985), memoir by Robert D. Harwick, VIII, no. 2 (1986): 131
BLOOM, BERNARD S., "Rationing Health Care: Tragic Choices," VIII, no. 1 (1986): 27
Books Reviewed
Brain Machine, The (Jeannerod), VIII, no. 4 (1986): 256
Chemical Neurobiology: An Introduction to Neurochemistry (Bradford), VIII, no. 4 (1986): 253
Complications in Surgery and Trauma (Greenfield), VIII, no. 1 (1986): 47
Dying at Home with Hospice (Chase), VIII, no. 4 (1986): 261
Epidemiological Reviews, Vol. 7 (Szklo et al., eds.), VIII, no. 3 (1986): 206
Guillaume Dupuytren: A Surgeon in His Place and Time (Barsky), VIII, no. 2 (1986): 127
Healer's Art, The (Cassell), VIII, no. 2 (1986): 121
Life with the Pneumococcus (Austrian), VIII, no. 3 (1986): 201
Man Who Mistook His Wife for a Hat and Other Clinical Tales, The (Sacks), VIII, no. 3 (1986): 203
Plain Pictures of Plain Doctoring (Stoeckle and White), VIII, no. 2 (1986): 124
Saranac, America's Magic Mountain (Taylor), VIII, no. 3 (1986): 208
Sex and Gender (Archer and Lloyd), VIII, no. 2 (1986): 129
Woods Hole Cantata, The: Essays on Science and Society (Weissmann), VIII, no. 4 (1986): 259
BOUCOT, ARTHUR J., review of Gerald Weissmann, *The Woods Hole Cantata: Essays on Science and Society,* VIII, no. 4 (1986): 259
"Cataracts 1986: Facts Versus Myth," see Lichtenstein, VIII, no. 1 (1986): 19
"Choosing Students — Making Doctors," see Eckenhoff, VIII, no. 1 (1986): 7
College Archives Fellows Deceased in 1985, VIII, no. 1 (1986): 71
Fellows Elected in 1985, VIII, no. 1 (1986): 71
Officers, Council, Committees, Reports and Programs, VIII, no. 1 (1986): 53
Sections of the College: Officers, Reports, Programs, VIII, no. 1 (1986): 67
COOPER, DAVID Y., "William Edmonds Horner (1793–1853), America's First Clinical Investigator," VIII, no. 3 (1986): 183
CORIELL, LEWIS L., "Report of the Bicentennial Program Planning Committee and New Century Fund," VIII, no. 1 (1986): 1
"Dialogue with Animals," see Katcher and Beck, VIII, no. 2 (1986): 105

Transactions & Studies of the College of Physicians of Philadelphia ser. 5, vol. 8, no. 4 (1986); 287-289.
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DIETRICH, HERBERT J., JR., memoir of Helen Brooke Taussig (1898–1986), VIII, no. 4 (1986): 263

"Dr. Albert L. Shelton (1875 – 1922) and the Tibetan Collection in the Newark (New Jersey) Museum," see Rogers, VIII, no. 2 (1986): 101

ECKENHOFF, JAMES E., "Choosing Students — Making Doctors," VIII, no. 1 (1986): 7

ELLIOTT, FRANK A., memoir of Robert E. Jones (1930 – 1985), VIII, no. 1 (1986): 51

FORBES, GLENN, "The Impact of Computed Tomography and Magnetic Resonance on Diagnostic Medical Imaging," VIII, no. 4 (1986): 215

"George E. de Schweinitz, M.D., and the de Schweinitz Lecture in Ophthalmology," see Barnshaw, VIII, no. 1 (1986): 37

Hahn, George Allen (1911 – 1986), memoir by J. Edward Lynch, VIII, no. 4 (1986): 273

HARWICK, ROBERT D., memoir of John Valentine Blady (1905 – 1985), VIII, no. 2 (1986): 131

"Health Care in the 1980s: Changes, Consequences and Choices," see Kissick, VIII, no. 2 (1986): 89

HERING, ALEXANDER C., review of Lazar J. Greenfield, *Complications in Surgery and Trauma,* VIII, no. 1 (1986): 47

HORROCKS, THOMAS A., "Thomas Hewson Bache: A Forgotten Fellow of the College of Physicians of Philadelphia," VIII, no. 4 (1986): 247

HOWLAND, ELIHU S., review of Eric J. Cassell, *The Healer's Art,* VIII, no. 2 (1986): 121

Hughes, Joseph M. F. (1905 – 1986), memoir by J. Martin Myers, Jr., VIII, no. 4 (1986): 270

"Impact of Computed Tomography and Magnetic Resonance on Diagnostic Medical Imaging, The," see Forbes, VIII, no. 4 (1986): 215

INCH, PATRICIA, and WELLS, PATRICIA, review of Deborah Chase, *Dying at Home with Hospice,* VIII, no. 4 (1986): 261

Jones, Robert E. (1930–1985), memoir by Frank A. Elliott, VIII, no. 1 (1986): 51

"Joseph Pancoast (1805–1882): Jefferson Anatomist and Surgeon, and His World," see Radbill, VIII, no. 4 (1986): 233

KATCHER, AARON H., and BECK, ALAN M., "Dialogue with Animals," VIII, no. 2 (1986): 105

KISSICK, WILLIAM L., "Health Care in the 1980s: Changes, Consequences and Choices," VIII, no. 2 (1986): 89

KLING, VINCENT G., "Architectural Concepts in 1909 and Their Influence on the College Building Design," VIII, no. 2 (1986): 75

LICHTENSTEIN, STEPHEN B., "Cataracts 1986: Facts Versus Myth," VIII, no. 1 (1986): 19

LONG, DIANA ELIZABETH, review of John Archer and Barbara Lloyd, *Sex and Gender,* VIII, no. 2 (1986): 129

LYNCH, J. EDWARD, memoir of George Allen Hahn (1911 – 1986), VIII, no. 4 (1986): 273

McCLENAHAN, JOHN L., review of Robert Taylor, *Saranac, America's Magic Mountain,* VIII, no. 3 (1986): 208

McDonald, P. Robb (1909 – 1985), memoir by William Tasman, VIII, no. 1 (1986): 49

Memoirs

- Blady, John Valentine (1905–1985), VIII, no. 2 (1986): 131
- Hahn, George Allen (1911 – 1986), VIII, no. 4 (1986): 273
- Hughes, Joseph M. F. (1905–1986), VIII, no. 4 (1986): 270
- Jones, Robert E. (1930–1985), VIII, no. 1 (1986): 51

McDonald, P. Robb (1909 – 1985), VIII, no. 1 (1986): 49
Taussig, Helen Brooke (1898 – 1986), VIII, no. 4 (1986): 263
MYERS, J. MARTIN, JR., memoir of Joseph M. F. Hughes, (1905 – 1986), VIII, no. 4 (1986): 270
OTTENBERG, PERRY, "Public Attitudes Toward the Control of AIDS: The Homosexual's Plight," VIII, no. 2 (1986): 113
"Philadelphia and the White Plague," see Savacool, VIII, no. 3 (1986): 147
PLOTKIN, STANLEY A., review of Robert Austrian, *Life with the Pneumococcus,* VIII, no. 3 (1986): 201
PRESSMAN, ROBERT S., "Report of the President," VIII, no. 3 (1986): 139
"Public Attitudes Toward the Control of AIDS: The Homosexual's Plight," see Ottenberg, VIII, no. 2 (1986): 113
RADBILL, SAMUEL X., "Joseph Pancoast (1805–1882): Jefferson Anatomist and Surgeon, and His World," VIII, no. 4 (1986): 233
"Rationing Health Care: Tragic Choices," see Bloom, VIII, no. 1 (1986): 27
"Report of the Bicentennial Program Planning Committee and New Century Fund," see Coriell, VIII, no. 1 (1986): 1
"Report of the President," see Pressman, VIII, no. 3 (1986): 139
RESTAK, RICHARD M., review of Marc Jeannerod, *The Brain Machine,* VIII, no. 4 (1986): 256
Retrospection, Department of
Wagner, Frederick B., Jr., "The Jefferson Medical College Connection: A Letter from Sir William Osler," VIII, no. 4 (1986): 275
ROGERS, FRED B., "Dr. Albert L. Shelton (1875 – 1922) and the Tibetan Collection in the Newark (New Jersey) Museum," VIII, no. 2 (1986): 101
ROSSKAM, LOUISE, review of John D. Stoeckle and George A. White, *Plain Pictures of Plain Doctoring,* VIII, no. 2 (1986): 124
SAVACOOL, J. WOODROW, "Philadelphia and the White Plague," VIII, no. 3 (1986): 147
SCHUMANN, FRANCIS, review of Hanna K. Barsky, *Guillaume Dupuytren: A Surgeon in His Place and Time,* VIII, no. 2 (1986): 127
STOLLEY, PAUL D., review of Moyses Szklo et al., eds., *Epidemiological Reviews,* Vol. 7, VIII, no. 3 (1986): 206
TASMAN, WILLIAM, memoir of P. Robb McDonald (1909 – 1985), VIII, no. 1 (1986): 49
Taussig, Helen Brooke (1898 – 1986), memoir by Herbert J. Dietrich, Jr., VIII, no. 4 (1986): 263
"Thomas Hewson Bache: A Forgotten Fellow of the College of Physicians of Philadelphia," see Horrocks, VIII, no. 4 (1986): 247
WAGNER, FREDERICK B., "The Jefferson Medical College Connection: A Letter from Sir William Osler," VIII, no. 4 (1986): 275
"William Edmonds Horner (1793–1853), America's First Clinical Investigator," see Cooper, VIII, no. 3 (1986): 183

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Required by 39 U.S.C. 3685)

1A. TITLE OF PUBLICATION	1B. PUBLICATION NO.	2. DATE OF FILING
Transactions & Studies of the College of Physicians of Philadelphia	I S S N 00101-1087	October 22, 1986
3. FREQUENCY OF ISSUE: Quarterly	3A. NO. OF ISSUES PUBLISHED ANNUALLY: 4	3B. ANNUAL SUBSCRIPTION PRICE: $30

4. COMPLETE MAILING ADDRESS OF KNOWN OFFICE OF PUBLICATION *(Street, City, County, State and ZIP Code) (Not printers)*

19 S. 22nd street, Philadelphia, PA 19103

5. COMPLETE MAILING ADDRESS OF THE HEADQUARTERS OF GENERAL BUSINESS OFFICES OF THE PUBLISHER *(Not printer)*

Above

6. FULL NAMES AND COMPLETE MAILING ADDRESS OF PUBLISHER, EDITOR, AND MANAGING EDITOR *(This item MUST NOT be blank)*

PUBLISHER *(Name and Complete Mailing Address)*

The College of Physicians of Philadelphia, 19 S. 22nd Street, Philadelphia, PA 19103

EDITOR *(Name and Complete Mailing Address)*

John L. McClenahan, M.D., 19 S. 22nd Street, Philadelphia, PA 19118

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